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A survey of a number of megalithic grave complexes in Tamil Nadu, South India

McConkey, David Keith, M.A.

Western Michigan University, 1992

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A SURVEY OF A NUMBER OF MEGALITHIC GRAVE COMPLEXES IN TAMIL NADU, SOUTH INDIA

by

David K. McConkey

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Master of Arts
Department of Anthropology

Western Michigan University
Kalamazoo, Michigan
December 1992

THE GRADUATE COLLEGE
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WE HEREBY APPROVE THE THESIS SUBMITTED BY

David K. McConkey

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Date December 1992

A SURVEY OF A NUMBER OF MEGALITHIC GRAVE COMPLEXES IN TAMIL NADU, SOUTH INDIA

David K. McConkey, M.A.

Western Michigan University, 1992

This study compares and contrasts a number of Megalithic cemeteries from South India. The project involved the mapping of a number of cemeteries from the Lower Moyar Shelf. I then compared and contrasted them to the cemeteries of the upper Nilgiris.

Some have suggested that these two regions had very limited contact with one another. From the evidence that I have gathered I now believe that they were wrong. There is a strong continuity in grave types between the lower regions and the upper Nilgiris, which I believe demonstrates some degree of contact. I also believe that based on the distribution of grave types within the cemeteries that they were burying their dead according to some criteria, the most likely being social status.

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David K. McConkey

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CHAPTER I

INTRODUCTION

This paper will compare and contrast a number of Megalithic grave complexes in the southern portion of the Western Ghats, bordering Kerala and Karnataka in the state of Tamil Nadu, India. Specifically, the areas of study are the lower Moyar shelf and the upper Nilgiri plateau. For years scholars have argued that these two regions were isolated from one another. Based on my findings I now believe that there was much more contact than previously thought. For this project, I mapped a number of cemeteries along the lower Moyar shelf and then compared them to the grave complexes of the upper Nilgiris.

A total of 840 graves in seven cemeteries were mapped. To draw comparisons between the two grave complexes, I will utilize grave and pottery types. These seven cemeteries were discovered by Allen Zagarell on his previous trip to the region.

History of the Megalithic Period

South India has long been known as one of the richest Megalithic areas in the world (Ramanna 1983 :1). The present political division of south India into Karnataka, Andhra Pradesh, Kerala and Tamil Nadu has yielded thousands of Megalithic graves. Each region appears to have had its own individual grave constructing techniques, yet each shows similar traits. Depending upon the local burial practices and the availability of suitable raw materials for the construction of graves there appears to have been preferences for particular types of graves (Ramanna 1983:4).

Geography of Tamil Nadu

Tamil Nadu is geographically separated from the rest of South India, with the Eastern and Western Ghats acting as natural barriers. The Eastern Ghats begin at Orissa and pass into Andhra Pradesh running parallel to the coast. The Western Ghats, located close to the west coast, form the watershed of south India. In the east the Ghats grade gently even merging with the Mysore plateau and the interior plains of Madras. Within the Western Ghats is the Palghat gap, which connects the coastal plains of Malabar and Kanara with the plains of south Madras (Gururaja Rao 1972:4-20). Mysore extends from the Deccan Lavas on the north to the Moyar in the south; the western limits are the Ghats, and to the southeast the border hills and scarps of the Mysore plateau provide a rough boundary between the Moyar and the Palar (Spate,Learmonth and Farmer 1954:700-702). In the north the Nilgiris are cut off by the Mysore plateau and the "deep straight gash of the Moyar," the narrow floor of which lies at 1,000-2,000 ft. The plateau rises from about 1,500-2,500 ft. in the north to about 3,000-4,000 ft. in the south (Spate, Learmonth and Farmer 1954:701). This massif is skirted by the Moyar in the north and the Bhavani in the south. The Balaghat gap where the Ghats are much lower in elevation appears as a continuation of the Mysore tableland. To approach the Nilgiris from the plateau one finds a scattered chain of hillocks covered with scrub jungles (Singh 1971:853-854).

Nilgiri Hills

The following account of Nilgiri geography is provided by Niak (1966:25-27).

> The Nilgiri Hills is made up of a plateau 35 miles long, 20 broad and over 6500 feet high on an average. They are bounded on the North, partly by the state of Mysore, partly by the Wynaad; on the East by the district of Coimbatore; on the south partly by Coimbatore, and partly on the west by Kerala. The Nilgiris rise abruptly from the plains below, and

on the west, above the Ouchterlony valley and southward, its sides are often sheer bare walls, hundreds of feet in height, and too steep even for trees to grow. Elsewhere dense forest covers almost the whole of its slopes. Along the south-western edge of the plateau runs a line of hills called the Kundas, several of their peaks are over 8000 feet in height. The Nilgiri plateau is drained by hundreds of streams, most of which are perennial. These small streams fall into either the Moyar on the north of the Bhavani or on the south and so eventually into Caveri.

The Megalithic Culture

The word megalith is derived from two greek words meaning "great stone." These stone monuments primarily fulfilled a funerary or commemorative purpose and were of a religious nature (Mahalingam 1978:48).

The Iron age or Megalithic period in India closely followed the Neolithic period. In fact there appears to be no gap between the two. At the site of Brahmagiri the Megalithic culture was found to overlap the preceding Neolithic culture which was later completely assimilated by the Megalithic (Narasimhaiah 1980:43-46).

There are a number of different theories regarding the lifeways of the Megalithic people. Many scholars see the available evidence showing that the Megalithic people practiced agriculture with hunting and fishing as a part-time occupation. Faunal evidence indicates that they raised sheep, goat and domestic cattle, suggesting that at least part of the population carried out pastoralism. Agricultural tools such as iron sickles, iron strapped hatchets and plough-shares have been found, which further indicate a settled agricultural life. Some megaliths have yielded direct evidence of grain cultivation (Bhalchandra Deo, 1973:18-21).

Although hundreds of burial sites have been found only a hand full of habitation sites are known. The few settlements associated with Megalithic cemeteries indicate that both villages and cemeteries were located so as not to impact any arable land (Gururaja Rao 1972:298). At sites like Paiyampalli, one of the few habitation sites belonging to

the Megalithic, there is evidence of iron smelting and a number of floor plans of dwelling places were found. These homes were small one-room huts which were either circular, oval, or oblong in plan (Purushottam 1970:69). Another site Maski yielded agricultural tools such as plough coulters, sickles and knives. Other implements include iron swords, spears and daggers. Structural remains consist of simple huts with floors occasionally being plastered with lime (Ghosh 1990:125). Further strengthening the theory that the Megalithic people carried out agriculture are the irrigation reservoirs that have been found cut into the sides of hills (Bhalchandra Deo 1973:21). The sophisticated range of carpentry tools such as chisels and adzes suggests that they had a good working knowledge of wood and how to use it in construction (Bhalchandra Deo 1973:20). Singh states that the Megalithic people were primarily agriculturalists with rice as their primary staple (Purushottam 1970:69). Leshnik's belief is that the Megalithic folk were mainly pastoralist who occasionally carried out grain cultivation (Leshnik 1974:54). It is probable that the Megalithic culture had a pastoral component, with herds of sheep and goats being taken to hills to graze while the cattle remained in the lower areas. However, the evidence clearly suggests that a major portion of the population carried out agriculture.

Chronology and Origin

Scholars such as Banerjee, Leshnik, and Allchin believe that the Megalithic peoples came to India from Northern Iran and Central Asia through Baluchistan and the Vindhyas (Mahalingam 1978:62).

Some argue that the Megalithic was an indigenous development. Pande states that the Megalithic period in the north evolved out of the earlier Neolithic burial practices. He stresses the fact that in the Neolithic period they were using large stones

in the construction of burials, a trait that can be seen in the Megalithic (Gururaja Rao 1972:22-39). Archaeological evidence from the Chalcolithic period in Central and Western India has established that at least some of the burial practices of the Megalithic people were adopted from the Neolithic-Chalcolithic period into the Megalithic. Allchin (1982:341) states "The south Indian graves appear as a developing complex, first arising around the end of the second millennium, and lasting for many centuries, probably not less than a thousand years". He also points out that many of modern burial customs show a direct continuation of the traditional into modern. Allchin (1982:342) further believes that there must have been a wide spread population in the peninsula during Neolithic-Chalcolithic times.

The terminal date for the Megalithic at least in the lower areas has been well established; with evidence coming from a number of sites yielding Roman coins and pottery. The Megalithic period in most regions probably continued to flourish until about 100 A.D. in the lower regions. The beginning, however, is more difficult to define. Wheeler's excavation at Brahmagiri provided for the first time a firm base for the Megalithic culture in South India. In his excavations he encountered three distinct stratigraphically superimposed cultural phases. The uppermost was firmly dated by a number of Roman coins minted in the first half of the second century. Roman pottery was also found. The underlying Megalithic phase consisted of a deposit between three to four feet thick, and yielded distinctive Black and Red pottery associated with iron implements. The lowest layer was of the Neolithic period (Gururaja Rao 1972:310-311). From the evidence at Brahmagiri, Wheeler postulated a date of around 200 B.C. However, with the advent of C-14 dating, Wheeler's dates would appear to be too recent (Bhalchandrs Deo 1973:43-44). Other scholars, such as Banerjee and Haimendorf advocate a date of around 700 B.C. for the lower areas. Their earlier temporal

placement reflects a relationship of the perceived Megalithic with the Chalcolithic cultures (Gururaja Rao 1972:310-312).

As I have demonstrated above the problem of the origin and dates of the Megalithic remains a controversial question. Most would agree that the terminal date for the Megalithic in the lower areas is around A.D. 100. The beginning however, is somewhat more questionable, it can tentatively be dated to begin about 500-800 B.C.

Definition of Megalithic Types

The following is an account of the graves types from southern India provided by Gururaja Rao in his The Megalithic Culture in Southern India. (Gururaja Rao 1972:234-255).

1. Dolmen: This is a box like chamber made of three completely rude or partially dressed stones, leaving one side open. It may be fully or partially above ground or underground and is usually not covered with a capstone. The dolmen may or may not be enclosed by a stone circle or have a cairn piled over it. Dolmens are not associated with the direct interment of bones, rather they are used for the memorialization of the dead or for worship.

2. Slabbed cist: This is a general term for cists of different types made of four stone slabs. They are usually surrounded by one or more stone circles and covered with cairn stones. A number of different types of such cists can be found in the south, including: cists that have a porthole, usually occurring on the eastern orthostat; and transepted cists with a passage whereby the cist is divided in two by a slab laid vertically in the center. A porthole is usually found in the transepted cist, and two slabs, one each on either side of the porthole, are erected to provide a passage. The cist and passage are generally covered by a capstone.

3. Cairn circle: this feature consists of a heap of stone rubble, sometimes enclosed within a circle of boulders. The cairn circles are the most ubiquitous form of grave found in South India. Many cairns are found with cists.

4. Stone circle: this comprises a circle made with boulders of varying size. They may enclose various forms of monuments like the cist or cairn.

5. Menhirs: the menhir is comprised of monolithic slabs or boulders erected vertically in the ground; they may be dressed or undressed.

6. Barrow: this is a mound of earth encircled by a ditch, and sometimes also by one or more stone circles.

The megaliths of south India are generally made of granite, sandstone slabs, or laterite blocks of stone.

The Ceramic Industries of the Megalithic

There are three main types of pottery associated with the Megalithic period. The most predominant is the Black and Red ware, followed by the Black Polished ware and the Red ware.

Black and Red Ware

This ware is completely black inside and reddish on the outside and bottom. This coloring is believed to have resulted from a technique called inverted firing. In this process of firing the interior of the pot becomes black under reducing conditions while the outer exposed portion becomes red under oxidizing conditions. The ware has a fine polish and slip. The interior of the vessel often exhibits a cracked surface, which Wheeler attributed to salt glazing (Ramachandran 1980:60). The Black and Red ware is typically plain with little decoration, where decoration does exist it usually consists of

incised grooves on the neck and shoulder: however, graffiti has also been found on some vessels as well (Gururaja Rao 1972:259-261). This ware is wheel-thrown, well baked, and essentially utilitarian in shape. The most characteristic forms are tulip-shaped vases, bowls, jars and small pots. There is a variety of Black and Red ware called Russet-Coated Painted ware or Andhra ware. After the pot had been formed and the paste dried, thin coats of reddish-brown ocher was applied. The surface was then painted in kaolin which when fired took on a high polish. The designs that occur most often are parallel wavy lines, diamonds and intersecting parallel bands. This ware has been found in Coimbatore and other nearby regions (Ghosh 1990:248).

Black Polished Ware

This ware appears to have been analogous to the Black and Red ware. It is completely black with a high polish. It occurs in two varieties: (1) a thin walled and polished variety and (2) a thick walled and less polished variety. The former is the most prevalent type being found in almost all sites during the Megalithic period (Mahalingam 1978:54-55). Pot forms include a variety of lids and ring-stands. This ware does not appear to have been well fired.

Red Ware

This ware belongs to the same cultural horizon as the above mentioned ceramic wares. It is wheel-thrown, but is lesser in quantity. The ware has a drab appearance; but some vessels do present a slip, wholly or partially bright red and sometimes even burnished. The shapes are strictly utilitarian: ring-stands, goblets and jars of various shapes and sizes (Mahalingam, 1978:55-57).

Dates of the Megalithic Pottery

The origin and dating of the Black and Red ware has been controversial among scholars. Narasimhaiah, in his book Neolithic and Megalithic Cultures in Tamil Nadu, (Narasimhaiah 1980:178) has dated the beginning of the Black and Red ware in the Coimbatore region to 250-350 B.C. He also points out that although the pottery belongs to the same group, meaning the Black and Red ware, there are differences from region to region. Even more problematic is that this ware would seem to appear in different regions at different times (Narasimhaiah 1980:178), providing a major obstacle to securing a firm date for the South Indian megaliths.

Mahalingam, on the other hand, tentatively dates the Black and Red ware to 1000 B.C. He bases this on Sundara's work showing a non-Megalithic Black and Red ware overlapping a Megalithic phase, from Western India (Mahalingam 1978:56). He believes that this non-Megalithic Black and Red ware survived from the Chalcolithic period until the inception of iron which has been dated to 800-1000 B.C. In order to fully understand the scope and context of my project one must understand the Megalithic period. The above sections are intended to familiarize the reader with the Megalithic period and bring to light some of the problems that I have encountered. The absence of a firm chronology for both areas, along with the many speculations regarding the origin of the Nilgiri populations has made it difficult to put forth any workable hypothesis.

CHAPTER II

SITES FROM THE LOWER MOYAR REGION

Methodology

The methodology employed during the project was survey in nature, no excavation took place. This has obviously placed certain limitations on my analysis, since all of the data was collected through surface survey. Each site and grave was given a number. The diameter and height were measured. In cases where cists and capstones were present, the width, length and orientation were recorded. When the grave appeared to be disturbed, a surface collection was carried out to recover any associated materials, such as pottery. After each grave was plotted and drawn on graph paper, the distance from one grave to another was determined using an electronic distance meter, together with the help of a 50m tape. Finally, when all the measurements had been taken, the grave was photographed and any comments were entered into the log.

It will not be nesscessary to review each grave since only slight variations occurred among the grave types that I mapped. Rather, what I have done is to provide the average size, and various types of graves from each cemetery. I have chosen to present those graves that stand out, either because they contain pottery or because the size or construction of the grave is unique. This will reveal the sites characteristics and provide the information needed for the reader to compare these sites to those on the upper Nilgiris. Maps of each cemetery are provided in the back of the thesis.

Thengamarada II

The site of Thengamarada II (TM-II) lies near the village of Thengamarada along the Moyar river. This cemetery contains 201 graves and is one of the largest mapped. The graves here vary from small cairns only 1.5m in diameter to stone circles containing cairns, one of which is over 20m in diameter. The distribution of grave types is as follows: 170 cairns; 15 stone circles with cairns; and another 16 graves which contain either a cist, or capstone by themselves or both.

The cairns range in size from 3m to 22m in diameter, with the average being 6.94m. The vast majority of cairns are circular in shape; however, a few appear to be more elongated than circular. Cairn height varies from 0 up to 2.30m, with the average being 39cm. Twenty-nine graves consist of both a cist and capstone, while 11 graves exhibit only capstones and 47 graves have only a cist.

The distribution of cairns at TM-II is uniform throughout the site, as is the distribution of cairn size. There appears to be no delineation between cairn size and placement. If there were some differences this may have suggested that they were utilizing certain parts of the cemetery for specific individuals, but this does not appear to be the case here. The distribution of stone circles, although less in number, appears to be more localized in the western portion of the cemetery (Map 1). Eleven of the 15 stone circles are located in the western portion of the cemetery and do not appear to have been placed alone. While Graves 1-3, 6 and 44 make up the largest group, there are two groups of two and one group of three stone circles. The remaining three, Graves 34, 57 and 133, represent isolated episodes of interment. Of the 15, three contain cists, four have capstones, five have both a cist and capstone, and the remaining three exhibited none of the above. The size of these stone circles range from 5m to 10.5m in diameter with the largest being 22m. The average is 8.8m. Height varies from

30cm to 2.3m, with an average of 75cm. Although there are more cairns than stone circles, on the average the stone circles are larger than the cairns.

The first nine graves described below are important because they yield pottery. This may help establish a chronology for the cemetery.

Grave 55 is a cairn 8.2m in diameter with a height of 25cm. The grave has been disturbed and a number of small pottery shards were scattered over the surface. One rim fragment was found measuring 20cm in diameter. We have termed the pottery as a type of Orange ware. It appears to be handmade; tempering is a mixture of quartz and grit; and it is poorly baked and dark reddish brown in color. This ware is probably a variant of the Red ware (Appendix A).

Grave 58 is a cairn 12.5m in diameter and 35cm in height. A cist is present; it measures 1.3m in length by 80cm in width and has an east-west orientation. This grave also contains a double capstone. The first measures 2.2m in length by 1.6m in width, and has an east-west orientation. The second capstone could not be measured. Pottery occurs within the cist; and appears to be a type of crudely Polished Red ware. It is handmade; tempering is a heavy mixture of quartz and grit, and it is incompletely baked.

Grave 63 is a possible barrow, but no ditch is evident. The grave measures 2.8m in diameter, with a cist. The cist measures 1.8m in length by 80cm in width and is oriented east-west. This grave is interesting because it yielded a shallow bowl of the Polished Black ware. The bowl was approximately 18cm in diameter. Also found are a number of fragments from another vessel, also of the Polished Black ware. Four large fragments of a rim were obtained and, when pieced together, gave a diameter of approximately 20cm (Appendix A).

Grave 105 is disturbed but the cairn could be measured, it is approximately 4.8m in diameter. Thirty-nine fragments of pottery were collected from the surface. The pottery belongs to the Black and Red ware type.

Grave 143 includes a cairn 5.8m in diameter. The grave has been disturbed and one fragment of Black and Red ware was collected.

Grave 144 has also been disturbed, and fragments of pottery were scattered over the surface. One hundred and five shards of Black Polish ware have been collected. Six rim pieces have also been found, but only one could be measured. It suggests a diameter of 22cm.

Grave 7 is a cairn 9m in diameter with a cist; unfortunately the cist could not be measured. A capstone is present, measuring 1.10m in length by 70cm in width; and it has an east-west orientation. This grave has been disturbed and pottery was collected. Two different types of pottery are seen here. The first is the Black Polished ware; including two medium sized rim shards measuring 10cm in diameter. The second type of pottery has been labeled a type of crude Red Polished ware. Nine other fragments were collected, but these do not appear to have been from a bowl or vase. These pieces are too thick and give the appearance of a possible sarcophagus or perhaps a large urn (Appendix A).

Grave 115 consists of a cairn 4.3m in diameter, with a height of 10cm. It does not appear to be disturbed, yet pottery is found on the surface. Two fragments of Orange ware were collected, one large body shard and a portion of a rim.

Grave 125 is a cairn 4.7m in diameter, with a height of 35cm. Two fragments of Orange ware were found. This grave also shows no signs of being disturbed so the pottery's association with the grave is questionable.

The above graves are important because they contain pottery. All of these wares are believed to be dated to the Megalithic period, therefore, helping establish a possible date for this cemetery.

Two other graves that stand out at this cemetery are Graves 132 and 133. They are by far the largest at the site, and both are spatially separated from the main cemetery (Map 2). These two burials may reflect how the elite of the society were buried. This could be important because it suggests that they were burying their dead according to social status.

Grave 132 consists of a very large cairn, 22m in diameter, and 2.3m high. A stone circle made up of medium to large boulders surrounds the cairn.

Grave 133, located just to the south of 132, is another large cairn 22m in diameter, and 2.3m in height. It is very similar to Grave 133, but does not have a surrounding stone circle. Both graves are located approximately 60m to the east of the main cemetery. Each appears to have been partially disturbed on the east side by a road. I believe that their monumental size and the fact that they are set apart from the rest of the cemetery, indicate that these may represent people of great importance. No other graves at this site come close to resembling these two.

There appear to be three possible groupings of graves here. These have labeled as groups A,B,C, and D (Map 1). In the northern section of the cemetery two lines of rocks were noticed. One near Grave 58 is 35m long, and the second running along Graves 71, 72 and 75 extends for 30m. What purpose would rock lines have served? We cannot be sure, but they may have acted as markers, delineating the boundaries of the cemetery.

All three wares, the Black and Red, Black Polished and the Red ware are found here. Based on this we can assign the cemetery to the Megalithic period.

Thengamarada I

The site of Thengamarada I (TM-I), lies at a short distance from TM-II. It is located about one kilometer to the east of the village of Thengamarada. The site is situated on a slope at the base of the Nilgiris. Elevations were taken; one meter drops are represented by plus (+) signs on the map. There is a gradual downward slope from the back of the cemetery northward. The entire area is covered with outcrops of rock; there would have been no shortage of raw materials here. This cemetery is made up of 201 graves, all of which are of the stone circle type. No cairns are found. Many of the stone circles are filled with earth instead of a cairn. Of the 201 graves mapped, 188 had earth piled in the center, while the remaining 13 had nothing. The stone circles vary in size from 1.5m to 9.5m in diameter, with an average of 4.04m. The height of the graves range from 0 to 70cm, with the average being 14cm. Three of the graves here were made up of double stone circles.

Only two graves contained pottery, making it somewhat difficult to propose a date.

Grave 77 is a stone circle 9m in diameter, with large boulders surrounding it. The grave has been disturbed and two fragments of pottery were found, one appears to be of the Orange ware type. It is heavily tempered with grit and quartz and it appears to be handmade and is a rust color inside and out. The second shard is identical to the first, but is tannish brown color inside and out.

Grave 169 is a stone circle 6.4m in diameter with medium to large boulders forming the periphery. It also appears to have been previously disturbed. Three rim fragments were found, and a measurement of 22cm was obtained from one shard (Appendix A). This piece belongs to the Black Polished ware, while the other fragments are of the Black and Red ware.

The next four graves are mentioned because they possibly contain cut stones surrounding an earth filled center. I believe that these graves may represent people of some importance.

Grave 125 is a circle of boulders surrounding a center filled with earth. The surrounding boulders are large in size and form a circle 7m in diameter. The center rises to a height of 50cm.

Grave 138 is a cairn 6.6m in diameter, with medium to large boulders surrounding it. The center consists of an earth fill which has a height of 40cm (Appendix B).

Grave 193 is the largest of the four. The boulders vary in height, but all appear to have been worked. The center is filled with earth rising to 50cm in height (Appendix B).

Grave 195 is the fourth grave with possible cut stones; some are squarish while others are more rounded. The center, filled with earth, rises to a height of 40cm. The size of the boulders varies, but most are large in size (Appendix B).

For whom were these graves constructed? The size of the graves and skill that went into their construction suggest that they were built for persons with some status. The fact that there are only four graves exhibiting cut stones further suggests that they were not meant for common people.

Three possible groupings have been identified and are labeled A, B and C (Map 2). The graves surrounding groups A and B almost appear as extensions of them. Looking at the distribution of graves by size it becomes apparent that there is no patterning within the cemetery based on size. It should be mentioned that there appears to be no change in grave size or type as one moves down slope from the southern to the

northern part of the cemetery. If there were some change, this may have indicated that delineating certain parts of the cemetery for specific individuals was being practiced.

These two cemeteries, TM-I and TM-II, although proximate, exhibit very different characteristics. At TM-II we have cairns with stone circles and cairns occurring by themselves, some of which are quite large in size. The pottery assembledge at TM-II contains the characteristic Black and Red ware, Black Polished ware, and a possible crude version of Red ware, which has been termed the Orange ware. TM-I, on the other hand, is solely comprised of stone circles, some of which are filled with earth. The pottery here is similar to that at TM-II, with Black Polished ware, the Black and Red ware and Orange ware occurring. From the pottery and grave types present it may be possible to put both of these cemeteries into the Megalithic period, but what would account for the differences in grave style? At the present time we do not know why some people were buried in cairns and others in stone circles.

Kallampallyiam

The site of Kallampallyiam lies near the Moyar river on the road to Thengamarada. At this site we observe for the first time that menhirs surround some graves. Unfortunately, most of the menhirs have fallen in or been broken, thus it was difficult to obtain some measurements. According to Narasimhaiah (1980:188) menhirs had so far only been reported from the site of Nichchampalayam in the Coimbatore District. At this site the menhirs are circumscribed by stone circles and are erected in the middle of cairn circles and dolmens. Narasimhaiah has dated the menhirs of the Coimbatore district to around 300 B.C.

The menhirs at Kallampallyiam appear to be similar to those at Nichchampalayam. Most menhirs are situated near the center of the cairns, or are

placed around the cairns. The greatest concentration of menhirs is found in group C (Map 3). The majority of the remaining menhirs are to be found in the western half of the cemetery. Group A, on the eastern side, does not contain any menhirs. The distribution of graves by size is fairly uniform throughout the site, graves containing menhirs are not nesscessarily larger than those without. The distribution of grave types at Kallampallyiam is as follows: of the 60 graves that were mapped, 42 are cairns; 10 are stone scatters; and 6 comprise either an isolated cist or capstone. Of the 60, a total of 20 graves have menhirs in or surrounding them. The cairns range from 2.5m in diameter up to 9m, with the average being 4.88m. Cairn height ranges from 0 to 1m, with an average of 22cm.

For the first time we have a grave the contains a porthole on the east with passage. Narasimhaiah (1980:184) has stated that this type of burial entered Tamil Nadu to the northwest of the study area with the Black and Red ware around 500 B.C.

Grave 17 contains a cist, with porthole and passage on the east. The cist measures 97cm in length and 68cm in width; its orientation is northwest-southeast. The orientation here may be important because it is similar to those megaliths found on the upper Nilgiris. The grave itself is approximately 25cm above ground level.

Grave 9 is a cairn 4m in diameter, with a height of 35cm. A cist and capstone are present, however neither of the two could be measured. Four medium sized menhirs along one side of the cairn have partially fallen in. Pottery collected from this grave is of the crude Red Polished ware.

Grave 18 is a cairn 4m in diameter, rising in height to 30cm. A capstone is present, but it has been broken. Three medium sized menhirs surround the cairn.

Grave 34 is a cairn 8m in diameter and is 1m in height. A capstone measuring 1.8m in length by 1.20m in width is present. Surrounding the cairn are four large menhirs, still partially standing.

Grave 37 contains a cairn 4m in diameter, with a height of 20cm. It does not appear to be disturbed. The cairn does contain pottery, the shards have been assigned to the Orange ware because a number of fragments exhibit an orangish brown color (Appendix A). This pottery appears to have been handmade. The tempering consists of heavy amounts of quartz and grit and is hard baked. One rim fragment was found; it measures 24cm in diameter.

The cemetery appears to be divided into three separate groupings of graves; A, B and C, are recognized, but more may be present (Map 3). The pottery found suggests a Megalithic date for the cemetery. The existence of Grave 17, with porthole and passage, further helps in dating the site.

The three cemeteries that I have just described, TM-I, TM-II, and Kallampallyiam, all lie at the base of the Nilgiris and are located relatively close to the Moyar river. Based on their relative location to one another I have grouped them together. All three based on the pottery can be placed within the Megalithic period. However, these cemeteries do not share all their characteristics. The only common traits are that both TM-II and Kallampallyiam contain cairn circles. Kallampallyiam contains menhirs, but neither TM-II, nor TM-I features them. TM-II is the only site with cairns surrounded by stone circles; TM-I contains stone circles, some of which contain cut stones. The only common factor between the sites are the pottery assembledge and the apparent grouping of graves.

What would account for such variation in grave types? Temporal differences may be one answer. Although they all date to the Megalithic period, it is possible that they

developed at different times. Thus, we witness different styles of interment. It may also be that different groups constructed them, each utilizing their own grave techniques. As of yet not enough evidence is present to support these hypotheses, to do so will require much more fieldwork.

Vazhaithottam I

The site of Vazhaithottam I lies about one kilometer north east of the village of Vazhaithottam. A total of 210 graves were mapped, the first 55 of which were mapped by Allen Zagarell on his previous trip to the region. The only information obtainable from his maps are the diameter of the graves and whether or not any cists or capstones are present. Thus, a number of measurements are simply not available. I began mapping with Grave 60; numbers 56 through 59 were omitted.

The predominant grave type here is the cairn circle with slab cist. Of the 210 graves mapped, 160 are cairns. The size ranges from 1.5m to 10.3m in diameter, with the average being 4.57m. The height of the cairns varies from 0 to 2m, with the average being 25cm. Twenty-six stone circles are also present, the largest being 8m in diameter and the smallest 3.8m. The average stone circle is 4.76m in diameter. Seventeen graves are found to contain a cairn surrounded by a stone circle. The largest is 10.5m in diameter, the smallest 2.50m, with the average being 5.59m. Height ranges from 15cm to 35cm, with an average of 28cm. The remaining 10 graves are either stone scatters, or single cists or capstones. Unfortunately, no pottery was recovered from any of the graves.

Graves 52, 53 and 54 were previously mapped by Allen Zagarell, and I could obtain only a limited amount of information from his maps. These three graves are

important because they are by far the largest at the site. One grave also contains a double stone circle, the only one found at the site.

Grave 52 is a large cairn, with a stone circle 10m in diameter. The surrounding boulders are small to medium in size, and the height is approximately 1.5m. There is a large capstone made up of two slabs in the center, and the orientation is east-west. The capstone could not be measured. There is also a large stone on the south portion of the cairn, it is approximately 4m by 2m wide. This may possibly be a second capstone.

Grave 53, which lies adjacent to 52, is another large cairn, but with no stone circle. The diameter is 7m. A large capstone is present, and a cist could be seen underneath, but neither could be measured (Map 4).

Grave 54 lies about 10m to the southeast of Grave 53. This grave contains a double stone circle; the diameter of the outer circle measures 7m and the inner 4m. Both circles are made up of medium to large sized boulders. A capstone in the center of the circle could not be measured (Map 4).

These three graves, although not monumental in size, clearly stand out at the site. The labor that must have gone into their construction and the fact that only three of this size and type occur at this site may suggest that they belong to the elite of society.

If we look at the distribution of grave types within the cemetery it becomes apparent that there is a division based on grave type. The northern portion of the cemetery is made up of 25 cairns, 14 cairns with stone circles and 15 stone circles. Within this section there appear to be at least six different groups, A-F (Map 4). Graves 52-54, the largest at the site, also occur in this area of the cemetery. These three graves in fact mark the division of the cemetery. By the way of comparison the

southern portion contains only one stone circle, Grave 210. The remaining 49 graves are cairns. These graves appear to occur in three main groups, A, B and C (Map 4).

None of the graves at this site exhibits any placement based on size, as we have large and small graves located next to one another. What we do find is a division based on grave type. The reasons for this division are unclear at this time, but it may represent a division within the society.

Since no pottery was collected from VZ-I, it will only tentatively be assigned to the Megalithic based on grave types alone.

Vazhaithottam II

VZ-II lies south east of Masinigudi on the road to Sigur. The site is mainly composed of small cairns and stone circles. Of the 44 graves mapped, 23 are stone circles, 10 are cairns, five are stone scatters and six are either capstones or cists occurring by themselves. Stone scatters were probably at one time cairns that have since been very badly disturbed.

There is also a clear division of grave types within this cemetery. The northern portion is made up entirely of stone circles while the southern section contains cairn circles, with the single exception of Grave 40 which has a cairn surrounded by a stone circle (Map 5). VZ-II is the only cemetery in which there does not appear to be groups of graves. A number of cairns in the southern half of the cemetery appear to have been badly disturbed. Five graves were found with only a capstone remaining, while another two had partial cists.

The stone circles range in size from 7.50m to 2.30m in diameter, with the average being 4.46m. The cairns are 2.4m to 8.5m in diameter, with an average of 5.8m. The

height of the graves varies from ground level to 60cm, with an average of 10cm. Three of the graves were found to contain double stone circles.

Grave 40 is the only cairn in the southern portion of the cemetery that has a stone circle. The stone circle measures 7.5m in diameter and is made up of medium boulders. The cairn rises to 35cm in height. In the center of the cairn is a triple cist. The middle cist has a portion of its capstone lying in the center. Cist 1 measures 2.5m in length by 90cm wide. Cist 2 measures 2m by 1m; and Cist 3 is 2m in length by 70cm in width. All three cists are connected and oriented east-west. It is possible that this grave represents a family burial, or part of one.

Grave 18 is the only one in which pottery is found, the grave also contains a double stone circle. The outer circle measures 4.4m in diameter and the inner 4m, with small to medium boulders making up both. A cist and capstone are present; the cist measures 65cm in length by 29cm in width. The orientation appears to be north-south, but it was not entirely clear. The capstone has been broken and could not be measured. Pottery was found on the surface just outside the stone circle. Because the grave did not appear disturbed and the pottery was found outside the circle, its association with the grave is questionable. The pottery has been labeled a crude example of Black and Red ware. It appears to be handmade; the tempering is a quartz and grit mixture, and it is poorly fired. A number of fragments have a blackish grey interior, and a reddish brown exterior. The majority of shards were thick body pieces.

The graves at this site represent two different types, the cairn circle and the stone circle, both of which are characteristic of the Megalithic period. No truly monumental graves are found here, but on average the cairns are larger than the stone circles. What is the significance of these double stone circles? A number of sites from the

Coimbatore region have yielded double, triple and even quadruple stone circles, as of yet we have no answers.

For what reasons did they choose to divide the cemetery based on grave type? Does this division represent social distinctions within the society? I will examine these questions more in Chapter IV.

Vazhaithottam III

This cemetery lies approximately 50m to the north east of VZ-II and on the other side of the road. The most frequent grave type is the cairn circle; 59 of the 70 graves mapped are cairns. The largest cairn measures 11m in diameter, the smallest 1m, with the average being 4.12m. The height of the cairns ranges from 0 to 70cm, with an average of 20cm. Only two stone circles are found, they are Graves 7 and 27 both of which measure 6m in diameter. Of the remaining graves, three are stone scatters and six contain only capstones.

Grave 66 is a cairn 3m in diameter and has a height of 20cm. This is the only grave that yielded pottery. However, the association of the shards with the grave is questionable since the pottery was found on the surface and the grave did not appear to have been disturbed. The pottery is a crude Red Polished ware. The shards appear to be handmade, with a heavy tempering of grit and quartz. It is poorly baked, with a black core, and is colored reddish brown inside and out.

The cemetery appears to be made up of at least five or possibly six small groupings; A-F (Map 6). Graves 1, 2 and 3 are located next to a road and have been disturbed. It is probable that many other graves along the road have been previously destroyed, so determining whether or not these graves constitute a group is impossible.

The distribution of cairns here is consistent throughout the site. Again there

appears to be no delineation between the placement of cairns and their size (Map 6). The two stone circles that are present contain cairns in the center and are located well apart from each other; thus, there appears to be no connection between the two. Of the six groups that I have identified, A, B, C and F are the most apparent, while groups D and E are less obvious and may be questioned.

From the evidence at VZ-III, we can tentively assign it to the Megalithic period. Since the pottery was found on the surface of an undisturbed grave, its association with the grave is questionable. Once again the cairn type predominates throughout the site, and there appear to be multiple groupings of graves within the cemetery.

Vazhaithottam IV

This site lies approximately one kilometer north west of the village of Vazhaithottam and is located within a short distance (1-2 km) of VZ-I. A total of 38 graves have been mapped. Ten are stone circles; 10 have cairns surrounded by stone circles; 11 are cairns; and the remaining four graves are stone scatters.

A possible dolmen with ritual area is present at the cemetery. This structure consists of a stone rectangle 17m long by 7m wide, in the center of which are the remains of a dolmen. All that remains are three vertical slabs; the fourth has fallen in. A capstone is present, but has been removed. The dolmen has a height of 90cm and appears to be oriented north-south. Nearby, a line of small rocks was found measuring 15m long, this line lies intermediate between both halfs.

The cairns range in diameter from 12m to 2.5m, with the average being 5.81m. Cairn height averages 31cm, with the highest being 1.5m. The stone circles measure anywhere from 3 to 10m in diameter, with a mean of 5.31m. Only one grave contains both a cist and capstone; eight graves contain only cists, and seven have only capstones.

Number 35 contains a stone scatter 30cm in height with four small menhirs surrounding.

Number 38 is a single menhir, 1.20m in height and 65cm wide. No surrounding stones are present.

Based on the types of graves found, VZ-IV can also be assigned to the Megalithic period. The cemetery can be divided into 2 parts, one of which contains menhirs. The northern half of the cemetery is further divided into two groups, A and B, while the southern portion also appears to have two groups as well, C and D (Map 7). The rectangular structure with dolmen is an interesting feature, but its significance cannot be determined at this time.

The distribution of grave types here is interesting. The cemetery appears to be divided into two halfs, both of which contain cairns, stone circles and cairns surrounded by stone circles. Hence, grave type does not provide the basis for postulating two divisions of this cemetery. There is no significant differences between the two halfs, yet they are clearly divided. The two groups of menhirs, 35 and 38, are located in the northern half. It is probable that these two groups of menhirs do not mark burials, but instead may represent ritual areas.

These four cemeteries, although located within 5 kilometers of each other, exhibit very different characteristics. One noticeable difference is the variation in the size of the cemeteries. VZ-I consists of more than 200 graves; VZ-II has 44 graves, VZ-III is made up of 70 graves; and VZ-IV has just under 40 graves. At VZ-I and VZ-II, we observe the delineation of areas within the cemetery for certain grave types. It also appears that at VZ-II and VZ-IV we have cemeteries being divided into two separate halfs. VZ-IV the only Vazhaithottam cemetery contains two menhirs, cairns surrounded by stone circles, and a large stone rectangle with dolmen. The only pottery comes from VZ-I and

VZ-II. Unfortunately, at both these sites the pottery was found on the surface of an undisturbed grave, thus affording a questionable association at best.

What then are the similarities between these sites? One common factor is the presence of the cairn and stone circle types of burial. Another similarity can be seen in the grouping of graves that occurs at three of the sites. VZ-II does not exhibit this trait.

What would account for such diversity among these four sites. As I have mentioned previously, it is possible that they were constructed at different times during the Megalithic; thus, we find variations in burial practices. Another possible scenario involves the construction of these cemeteries by different groups inhabiting the region, each utilizing its own styles and techniques.

In attempting to assign the above seven cemeteries to a period in Indian prehistory we need to review the work of Leshnik. In his South Indian 'Megalithic' Burials, The Pandukal Complex (1976), he attempts to show that the Pandukal Complex represents the remains of one or probably more nomadic pastoral groups. These groups would have belonged to a common cultural group living on the plains. He believes that these groups inhabited the southern Tamilnad plains, placing the above mentioned cemeteries into the Pandukal Complex. Leshnik (1974:21) points out two major aspects of the Pandukal Complex when he states:

> as a whole, it can be interpreted as the reflection of a martial equestrian cattle and sheep raising people who occasionally did a small amount of grain cultivation as well. The sole other serious alternative, that the Pandukal people were settled farmers practicing irrigation agriculture in effect, the Tamil peasantry does not accord as well with the observable evidence. Secondly, this interpretation explains the lack of any Pandukal settlement having been clearly identified (Leshnik 1974:21).

As stated in Chapter I, the available evidence shows that the domestication of cattle, sheep and goats had taken place and that agriculture was being practiced.

Leshnik believes that these pastoralists were nomadic; however, the evidence points to a more sedentary way of life. From this we can speculate that there must have been a pastoralist component within the larger more sedentary society. These groups were not nomadic as Leshnik suggests, but probably practiced transhumance pastoralism. In reference to Leshnik's claim that the Tamil peasantry does not accord well with being agriculturalists, clearly this is not the case in the Moyar region where we find sites connected with irrigation and rice cultivation (Allen Zagarell, personal contact 1992). Leshnik's Pandukal Complex is defined by an assembledge of artifacts, ranging from stone axes to iron swords. He believes that the southern Tamilnad plains contains many such burials sites. Leshnik (1974:54) states that no sites have been adequately excavated and reported on, thus making his present attempts to make his case difficult at best. However, some Megalithic sites have been excavated in the Coimbatore region, unfortunately the material was not obtainable.

CHAPTER III

THE NILGIRI PLATEAU

This chapter deals with a number of Megalithic sites from the upper Nilgiris. I will review the works of such scholars as Breeks, Noble, Hockings and Niak. After presenting a number of sites, I will then compare and contrast these sites with those that I have just mentioned in an attempt to draw analogies between them. I will also review pottery types, burial types, the distribution of sites and grave types and the possible dates that have been put forth for the Nilgiri monuments.

Since the mid-1800s the Nilgiri burials have posed two problems for scholars, the first being chronology. From my research I have found only one radiocarbon date that has been obtained from the Nilgiri's; it is impossible to erect an accurate chronology on the basis of only one sample. The second problem has been discovering who the authors of these graves were. Many theories have been put forward; unfortunately, they all inevitably rely on conjecture rather than solid evidence.

Burial Types

The most common types of burial in the Nilgiris are the cairn circle and barrow. Breeks (1873:72) opened over forty graves in the Nilgiris, and has classified them into four categories; cairns, barrows, cists and dolmens (Refer to pages 9-10 for grave types). The Nilgiri cairns appear to have been of several types, one of which Breeks calls Azarams. Breeks (1873:73) believes these azarams are inferior cairns and barrows, and refers to them as being first cousins to the cairns and barrows. Azarams are stone

circles that contain evidence of a burning. Breeks excavated a number of them and found deposits of charcoal, bone and iron objects in them. A second type of cairn consists of a circle of stones; sometimes of long stones laid round on a sort of ridge sloping inward. Breeks (1873:73) describes a type of grave that he calls a drawwell, he mentions four of these types:

> This consists of a dry circular wall, others seem never to have been regularly built up, but the circle is enclosed by a heap of rough loose stones sometimes built more carefully on the inner side of the circle, or faced inside with larger slabs, but sloping outside into a tumbled heap.

Stone circles also abound in the Nilgiris. Noble has divided the stone circles into two series: one with stones piled into circles, and another with individual stones forming circles (Noble 1976:96). Within these series there are variations as well. One type is built with stones piled upward to a central crest, usually about 60cm in height. From the crest there is a downward slope to both edges. In some cases there is another ring of erect stones in the center, some reaching heights of one meter. At other sites, some graves contain circles with two inner and adjacent circles of erect stones followed by piled stones forming a downward slope to the outer edge (Noble 1976:95).

Pottery of the Nilgiris

The pottery found in the upper Nilgiris is unique and forms a class by itself. The pots are made of a micaceous clay tempering mixed with sand. The colors range between light red and buff; the black uneven core suggests incomplete firing (Leshnik 1974:258). This Red ware is the only type found in the upper Nilgiris. Most vessels appear to have been wheel turned, although some are partially handmade and wheelturned. Some vessels are decorated, either with fingertip impressions, wavy lines, chevrons or oblique lines (Leshnik 1974:258). Some of the Nilgiri pottery expresses a utilitarian purpose, while the rest is funerary (Niak 1966:169). Niak (1966:169) classifies

the Nilgiri pottery based on the size, shape and decoration of the vessel. She divides the pottery into five groups; the first contains pots with conical bases and flaring mouths. Only a very few of these pots have any surface decoration; secondly, two or three bulbous shapes above the conical base, with the rim being shallow and flaring slightly; thirdly, pots with conical bases, generally smaller in size. Some decoration in the form of incised lines and impressions may be present; fourthly, the cooking vessels with flanged rims, carinated shoulders and rounded bottoms. Grooved lines are often found near the rim on these pots; and, lastly, globular shaped vessels that are shallow and have a flaring rim. Decoration usually consists of incised dashes and grooves. Niak points out that the pots of the first three types do not share any affinities with other pottery types in India. The cooking vessels, however, are used throughout South India even today (Niak 1966:197-198). From the above information one can see that the Nilgiri pottery is unique in style and ware to all of India.

What would account for there being only one ware in the Nilgiris. We can only speculate but one possible reason for this may lie in the raw materials used in the tempering and the firing techniques. Niak (1966:191) points out that the pots are slowly fired at low temperatures, which would not allow oxidation to occur. As for the tempering, the pots from the lower areas are generally made up of quartz and grit, while the Nilgiri ceramics contain a mixture of sand and micaceous clay. These factors may account for the presence of only one ware in the Nilgiris. The possible reasons for the uniquess in pottery styles will be discussed in Chapter IV.

Dating of the Nilgiri Sites

In attempting to show that a relationship exists between these two regions it is necessary to review the dates to determine whether the two areas correspond

chronologically. Niak (1966:139) examined a number of archaeological collections consisting of pottery, terracottas, bronzes, implements and gold jewelry from the Nilgiris. Her dates are based on the fact that some Nilgiri pottery has been found in association with bronze objects. She believes that the bronze objects appeared later in the Megalithic period, and thus gives a date of A.D 700-1100 for the Nilgiri grave sites.

Noble postulates a date of A.D. 100 for the beginning of the Megalithic in the upper Nilgiris and believes that it ends about A.D. 1100. His dates are based on three criteria. The first is a single radiocarbon date that Das (1957:147-48) obtained from a fragment of pottery that contained carbon. That single sample yielded a date of A.D. 910. Second, a gold coin discovered in a stone circle has been dated to the Roman Byzantine Series, which is approximately the fourth century A.D. (Hockings 1974:127). Third, he uses a funerary pot discovered by Das containing markings believed to be Brahmi characters, which have been dated to the first century A.D. (Hockings 1974:127-128). Based on the above evidence, Noble believes that the Nilgiris were not inhabited in pre-Christian times, but that most pre-historic remains were constructed between A.D. 100 and 1100. However, based on recent findings, there is now evidence to argue that the Megalithic people inhabiting the Nilgiris were in contact with the populations living on the lower plains during the Megalithic (Allen Zagarell, personal contact 1992).

Leshnik has compared the stylistic evidence of the Nilgiri remains to those of South Asia and elsewhere and ascribes a date of approximately the third to fifth centuries A.D. (Leshnik 1974:255-256). Therefore the dates for the Nilgiris monuments may tentatively be placed between ca. A.D. 100-1100 A.D.

Nilgiri Sites

In 1873, Breeks wife published his book Primitive Tribes and Monuments of the Nilgiris, the first authoritative and detailed account of the Nilgiri burials. As Breeks points out:

> the cairns and barrows are the most numerous of the monuments in the Nilgiris, they invariably occupy the commanding situations on the tops of hills, and ridges, often several cairn and barrows lie together, but some are single (Breeks 1873:72).

Gururaja Rao (1972:106) believes that the cairns number in the thousands, there by suggesting that they were constructed by a highly populous group.

A brief review of some selected sites will not only reveal their characteristics, but will provide the reader with information to compare them to those sites along the Moyar.

Cairns

Breeks opened two cairns on the top of a hill at Chiketnavoibetta, near Tuneri. The first measured 6.9m in diameter and was 75cm high. Breeks believed that the cairn was disturbed, since a number of slabs had been removed and were lying outside the circle. The soil within appears to have been disturbed as well. Pottery was found on the surface as well as in the cairn. Unfortunately, the only description of the pottery is that it was of a coarse texture (Breeks 1873:74).

A second cairn was located about 20 yards south-west of the first. It was similar in construction to the first, but had a diameter of 5.9m. This one had also been disturbed. One slab was found lying on the top of the wall, and there was evidence that it had once lain on the ground. There were three remaining slabs, all of which were oriented northeast-southwest. The largest measured 1.8m long by 1.2m wide (Breeks

1873:74). Pottery was found scattered in all directions, but no mention of the types was given.

Another cairn was excavated near Sholur. This cairn was made up of small stones and had a diameter of 6.3m. One slab was uncovered measuring 60cm long by 21cm wide and had a north-south orientation. Pottery was found underneath the slab; the shards had a coarse texture. Some were marked with wavy ridges, and a number of fragments were a dark red color, with traces of mica (Breeks 1873:79).

In all Breeks opened over 40 cairns, 27 of which he described. Of these 27, 14 were found by themselves, while the rest consisted of five pairs of two and one group of three. Breeks provides most of the measurements for the cairns, but a few are missing. Keeping this in mind, the average size for these cairns is estimated at about 5.2m in diameter.

Walhouse mentions a large stone circle of the well type located near the intersection of three roads from Ootacamund, Coonoor and Kotagiri. The cairn contained a circular well in the center; the sides of the well were built of large blocks. The well measured 1.5m in diameter and was 2.1m thick. The central well was filled with small stones (Walhouse 1873:275-278). Another site containing drawwells was discovered by Noble. This site, Seven Fort Hill, is comprised of seven piled stone circles with vertical sides. One circle has a semi-circle of similarly piled stones attached to it. The walls rise above 1m in height (Noble 1976:96-97).

In the early 1970s, Paul Hockings excavated a site, which he termed Paikara. His work at Paikara was the first controlled excavation reported in South India. Paikara consisted of five circles of unhewn stones. Two of the circles appear to have been disturbed, while the remaining three were intact. Hockings excavated only one circle, Circle E, which had a diameter of 5m. The cairn was divided into four segments,

one of which was not disturbed so that future archaeologists could excavate it. The other three were excavated with trowels in 10cm levels. Upon excavation, the burial yielded more than 58 objects, most of which were terracotta figurines. A central stone was found in the center of the circle; upon removal nothing was found underneath. Pottery was discovered on the surface as well as in the circle. The pottery appears to be locally made; it is a light reddish clay, which contains fine sand and mica. Hockings dates Paikara to the eight century (Hockings 1974:27-29). Hockings states that the initial goal of the project was to help establish a firmer chronology for the graves of the Upper Nilgiris. However, the excavations at Paikara did not help in the dating of these sites (Hockings 1974:27).

Stone Circles

Four stone circles were found near Nidigula. One had a diameter of 3.3m and was comprised of eight medium size boulders. Another, nearby, measured 2.6m in diameter. The remaining two circles were close by and were of similar size and construction (Breeks 1873:96-97).

Noble discovered another site that contained eight stone circles. The stones were placed next to each other to form a covered-over circular feature. Another, similar in appearance, was surrounded by a circle of separate stones. Two other arrangements appear to be stone circles, but they were very irregular (Hockings 1989:112).

Cists

At the ruined fort of Udiraya, on the slopes below Kotagiri, a number of cists were found, only one of which was excavated. The cist was surrounded by a circle of stones 5.4m in diameter. The four slabs were lying flush with the ground; another slab

lay at the bottom. The capstone had been removed and was found lying outside the circle. The cist measured 1.08m in length and 78cm in width with an east-west orientation. A porthole was found on the eastern orthostat. Some fragments of pottery were also found; they were thick and highly glazed. Breeks points out that this type of pottery had not yet been found in any cairn, which suggests that this grave may not be connected with the cairns (Breeks 1873:106).

From the evidence presented it becomes apparent that the cairn type is the most ubiquitous form throughout the upper Nilgiris and lower Moyar region. Cairns in the lower areas have been found to contain many more cists than those of the upper Nilgiris; the reason for this is unclear. Of the 824 graves that were mapped in the lower region, 462 were cairn circles, 274 were stone circles and 61 were either stone scatters, capstones or cists by themselves.

In summary, from the above evidence we can say that the predominant type of Nilgiri burial was the cairn and barrow; cists are present but occur in small numbers. Stone circles with their variants are also present. The orientation of the Nilgiri megaliths is northeast-southwest, with the exception of one cist found at Udiraya, where the orientation is east-west. The distribution of grave sites is mainly concentrated along the northwestern or northern rim of the Nilgiris. Within this region the distribution of grave types appears to be uniform.

Distribution of Sites and Grave Types

Noble's 1962-63 survey of the Nilgiris revealed a number of sites containing stone circles. The majority of these sites were located in the northwestern region, or near the northern rim of the Nilgiris (Appendix D). A few sites containing stone circles have also been found to the south and east. Two sites mentioned by Noble appear to

of contained a mixing of grave types. At sites P and E, there were found four different types of piled stone circles (Noble 1976:95). As to why they constructed these circles with such variation we cannot be sure.

It becomes apparent that within the Nilgiris there is no delineation of certain areas for specific grave types. A map provided by Noble shows the wide distribution of archaeological sites along the northwestern portion of the Nilgiris (Appendix D).

Breeks (1873:94-95), divides the cairns geographically into three groups. He states:

> The typical cairn, so to speak, the richest in contents and the most regular in arrangement, is found in the central division around Tuneri. The second group is found along the Segur road. On the whole, these are decidedly the roughest of the cairns. On the other hand, the actual stone work in this division is among the best. Many of the cairns are large, regularly built, and often faced with large slabs on the inside. Thirdly, the Peranganad cairns, lying between Kotagherry and Kodanad, differ less from those at Tuneri.

No mention of changes in the graves themselves is made in the third region.

CHAPTER IV

COMPARING AND CONTRASTING THE GRAVE COMPLEXES

Can an argument be made for these two regions being connected? Looking at the grave complexes from these two regions we do see some similarities. Stylistically, both contain cairn circles, stone circles, and cists. A few cists in the Nilgiris have been found with portholes, and a number of double stone circles have been found as well. The fact that we have one cist from the Nilgiris with an east-west orientation and one cist from the Moyar region with an northeast-southwest orientation, may indicate some diffusion of grave types. However, until more of these are found no conclusions can be made. The dates for the ending of the Megalithic in the lower areas correspond with the beginning of the Megalithic in the Nilgiris so chronologically it would be possible. These two factors are the strongest evidence in support of any connection existing between these two regions.

What then is the evidence indicating discontinuity between these two regions. Pottery would be one area. The Nilgiris consists of only one type, a Red ware, while in the lower Moyar we find the characteristic Black and Red ware, Black Polished ware, and Red ware. Stylistically they are also very different. From the lower regions we find tulip-shaped vases, conical vessels, ring-stands of squattish, elongated and hour-glass types. The Nilgiri pottery on the other hand mainly consists of tall cylindrical multiflanged or corrugated vessels, tall round-bottomed vases and bowls. Many vessels have lids with human figures on them (Ghosh 1990:247-249). The Nilgiri pottery, according to Niak (1966:200) has no affinity in shape and pattern with the pots found

in the rest in India. If these two regions were connected then wouldn't we expect to find some similarities in style. Another apparent discrepancy could be seen in the differences in cemetery size between the Nilgiris and the lower area. Nilgiri sites generally consist of several graves, but it is not uncommon to find isolated ones. This differs from the lower regions where we have sites containing hundreds of burials. This along with the very few habitation sites found may suggest that only small populations existed in the Nilgiris for some time.

If we look at the orientation of the graves we see that while the Nilgiri graves are oriented northwest-southeast, the graves from the Moyar region are placed east-west why, we cannot be sure.

In summary, what we have here are two different regions containing similar grave types but at the same time exhibit different pottery styles, cemetery size and grave orientation. At the present I cannot explain why we see such differences occurring between these two areas. One possible hypothesis regarding the similarities in grave type could be made. It is conceivable that the Megalithic folk who were initially inhabiting the lower areas during this period were forced out. It is possible that around A.D. 100 another group, possibly from the north, entered the region and forced them to either assimilate into their culture or move. Thus, some of the people migrated into the hills and took their burial practices with them. The dates for the Megalithic period in the upper Nilgiris would support this statement. It is believed that the Megalithic in the Nilgiris began around A.D. 100, corresponding with the proposed dates for the ending of the Megalithic in the lower region.

As of yet there is not enough evidence in the archaeological record to support my hypotnesis, to do so will require more archaeological and ethnographic research.

As mentioned earlier in Chapter II, there appears to be, at least from the lower region, the placement of graves into groups. These groups show up on the maps and appear as clusters of graves with gaps between each cluster and other graves. Six of the seven cemeteries that I mapped exhibited this clustering, therefore, it is more than just an isolated occurrence (Refer to Maps). At sites like VZ-II and VZ-IV, the cemetery is divided into two halves based on grave type (Map 4 and 5). These groupings do not appear to be based on grave size, as we have both large and small graves located next to one another. Do these groupings represent social distinctions? If so, what is the evidence for this? From the known excavated sites in the lower regions, we have the presence of skill oriented crafts and exotic materials. This would indicate a degree of social differentiation or ranking. Whether or not there was true stratification or class distinction is uncertain, as the main indications of social stratification are in grave good associations and grave-size differentiation. Unfortunately, we currently lack grave-good associations from the Moyar region, but the evidence that I have presented does suggest a social differentiation based on grave size and grave type differences. Is it possible that this separation of grave types reflects a social division within the society? Other evidence of this separation of grave types is mentioned by Leshnik. At the site of Suttukeni in district North Arcot; urn burials were found along with a number of stone cists, low cairns and boulder circles. A discernable pattern was noticed; the urn field was found to lie intermediate between and spatially distinguishable from two groups of cists. Leshnik raises the possibility that this may represent a social distinction between grave types (Leshnik 1974::42). From the Moyar region we have cemeteries with very large graves which would have required many man hours to construct located next to small ones. We also have the placement of these larger graves away from the main cemetery, as at TM-II. Why would they separate certain graves from one another? The fact that

there are only a small number of these large graves would suggest their importance. A number of the graves, although not monumental in size, exhibit other characteristics that suggest special treatment. For example, at Kallampallyiam Graves 9, 18 and 34 have cairns surrounded by menhirs. Evidence suggesting that they were utilizing certain parts of the cemetery for specific grave types has been presented. At VZ-I the northern section of the cemetery is made up of cairns, cairns with stone circles and stone circles by themselves. The southern portion with exception of one stone circle is entirely made up of cairns. VZ-II is divided by grave type as well. The northern half of the cemetery is completely made up of stone circles, while the southern part contains cairns, with one stone circle being present.

At the present time I feel that there is not sufficient evidence to suggest that they were burying their dead in groups according to social status. However, based on these grave sites, I do think that the data points to the burying of the dead according to some criterion, of which social status is the most likely.

CHAPTER V

SUMMARY AND CONCLUSIONS

It was once thought that the Nilgiris, because of its geographical location, was isolated from the rest of South India. Scholars such as Hockings, Gururaja Rao and Subba Rao believed that the cultures living in the Nilgiris had very little contact with the lower populations. It may be true that the geographical factors may have inhibited some contact but it certainly did not isolate these two regions from one another. From my research, I now believe that there must have been some contact between them. The similarities in grave types would tend to support the theory that the Megalithic people took their burial practices with them when they migrated to the hills and then continued to visit the lower areas. It can be suggested that not only was there contact between these two regions but that the Nilgiris burials are a continuation of the Megalithic from the lower regions. We can speculate that over an extended period of time they were utilizing the hills seasonally, during which a number of the graves were constructed. Then as mentioned earlier around 100 A.D. there was a migration from the plains to the hills thus, we see a continuance of the Megalithic. Although there are some grave types in the Nilgiris not found anywhere else in South India, these are too few in number to suggest that they evolved independently of the cairn or stone circle type. The presence of portholes and double stone circles, neither of which are found in great numbers on the plains, suggest that they were utilizing similar grave techniques. The evidence supporting a separation of the two regions could be seen in the lack of continuity between pottery assemblages, differences in cemetery size and grave orientation.

However, I think that this evidence alone does not support a theory of isolation. At the present time we do not know what caused these differences to occur, therefore making any conclusion purely speculative.

The hypotheses that I presented in Chapter IV are based on the results of my research. There is not yet enough evidence to support them. This study is the first of its kind regarding this region and thus lacks independent verification from other such studies to provide what is scientifically needed to substantiate my hypotheses. Until more work is done in the Nilgiris and surrounding areas, what we believe to have occurred during the Megalithic period will simply be based on conjecture rather than demonstrated fact.

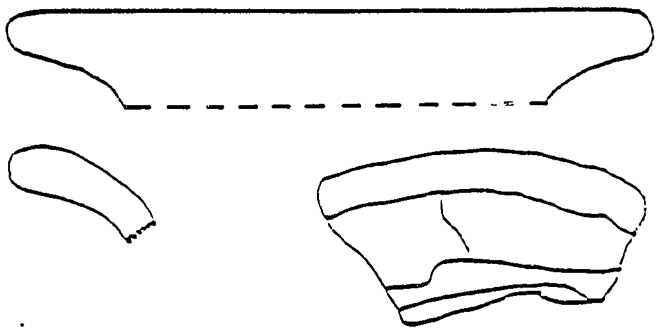
In order to solve these questions regarding the origin, dating and authorship of the Nilgiris the excavation of a number of graves within these cemeteries is necessary. More importantly, it is necessary to excavate within these groupings of graves and then compare the grave goods from each grouping. This may reveal ethnic distinctions within the culture itself, which may then lead us to a better understanding of why the Megalithic people buried their dead in such a manner.

Appendix A

Pottery From the Lower Moyar

Grave no. 7

Black Polished



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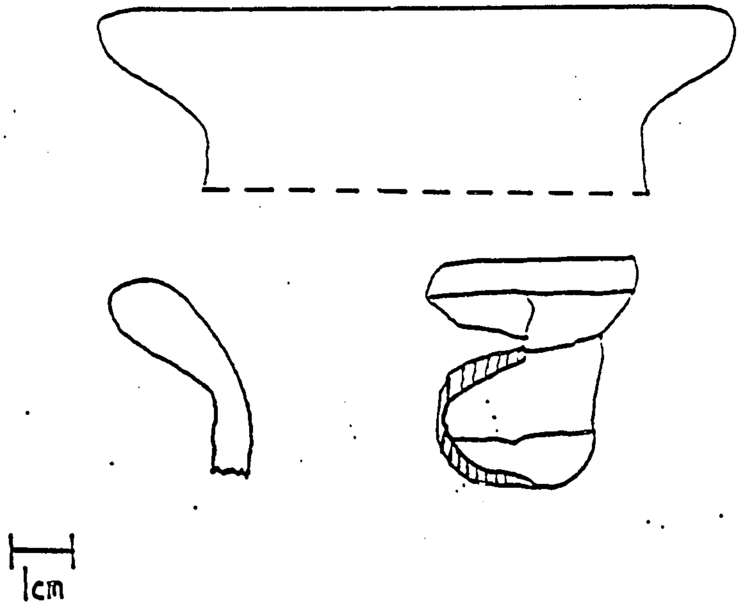

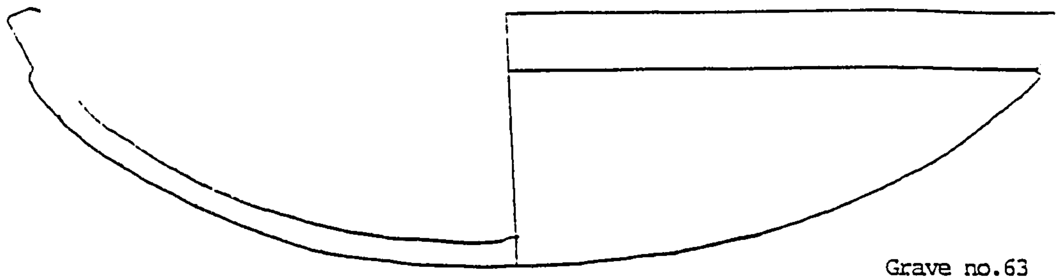

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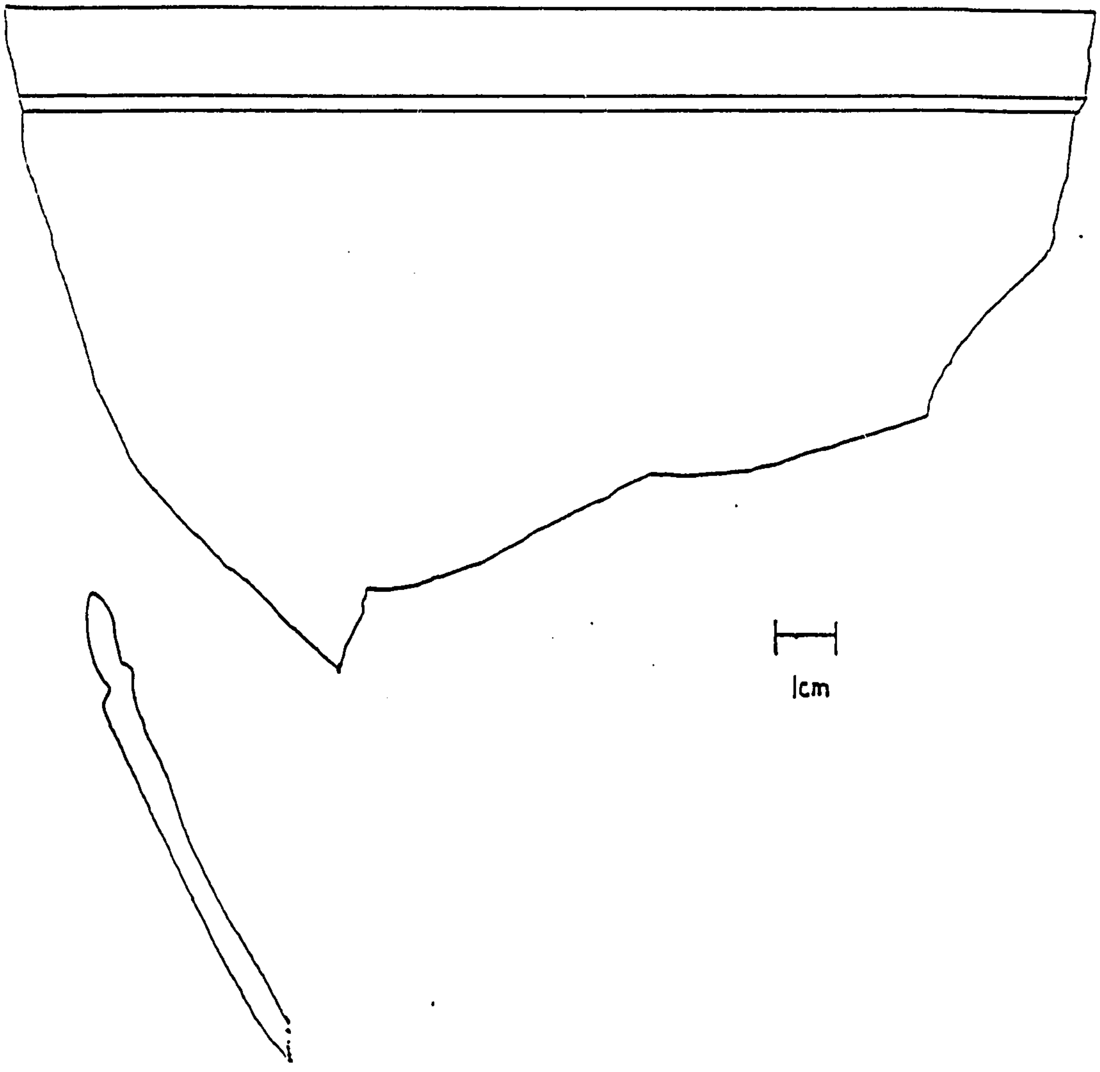
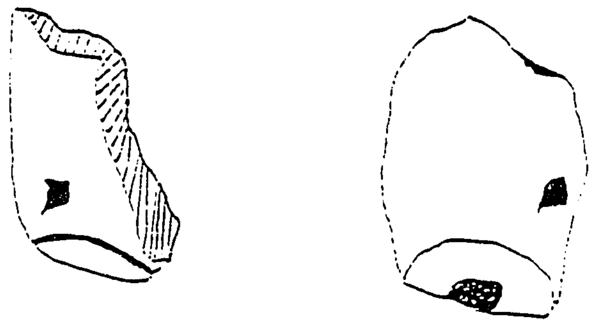
Black Polishe

Grave no. 63
Black Polished Ware



Grave no. 7

Crude Red Polished



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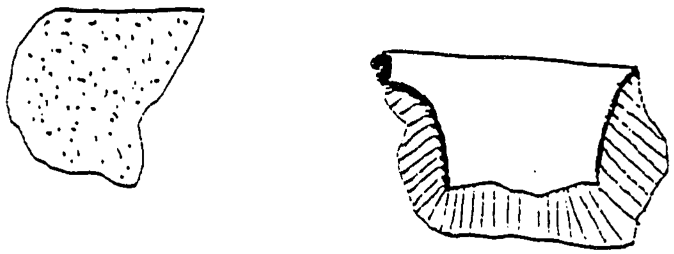

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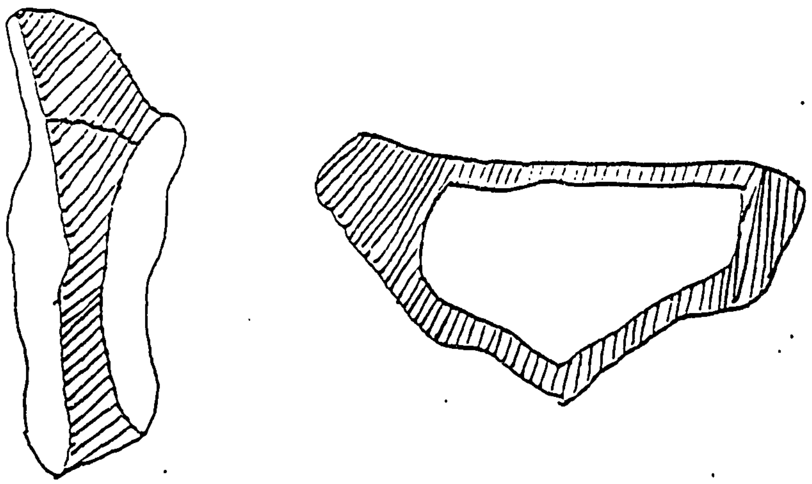

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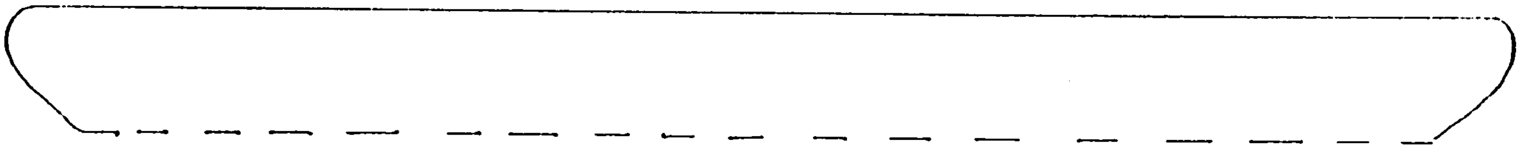
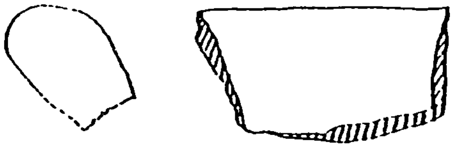
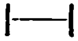




Grave no. 37

Orange ware



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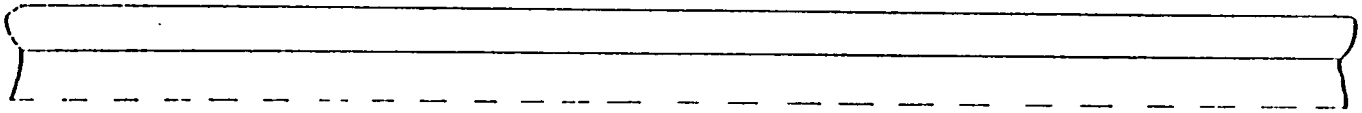


Grave no. 169

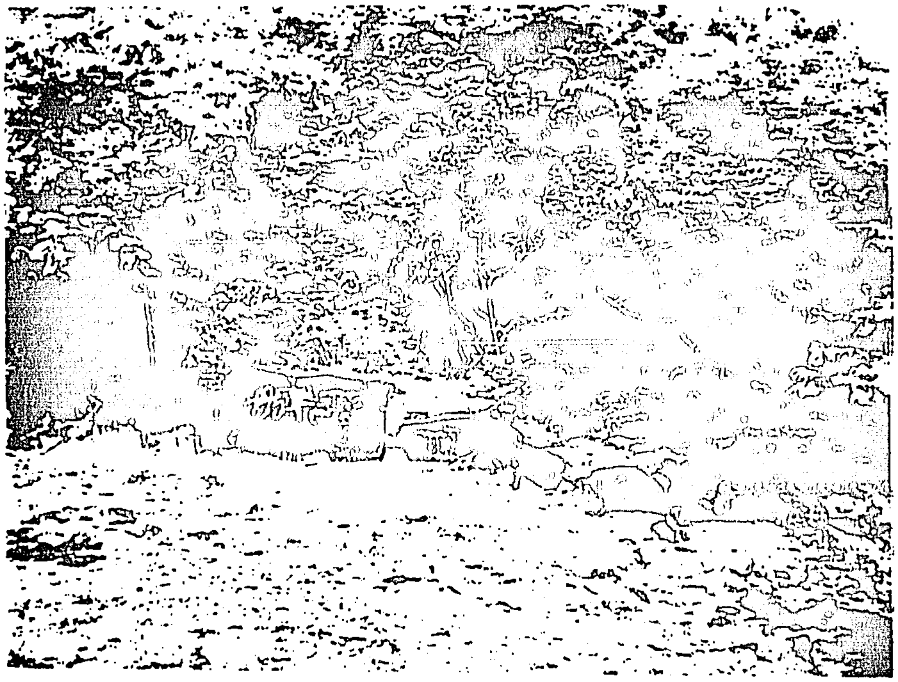
Black Polished Ware

Appendix B

Photographs of Grave Types

THENGAMARADA I

Grave 195
Stone Circle
with possible
cut stones

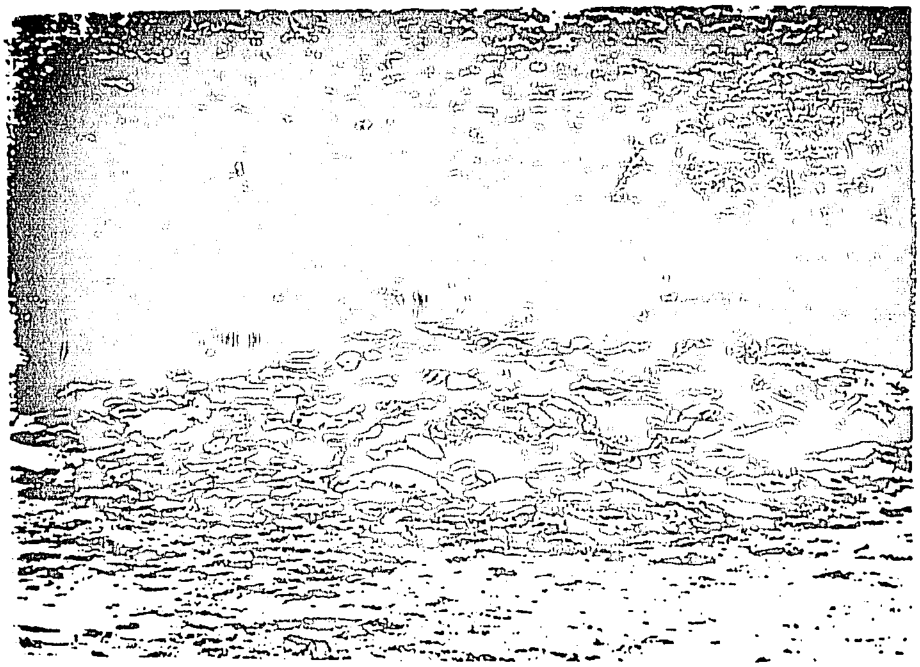


THENGAMARADA I

Grave 193
Stone Circle
with possible
cut stones

THENGAMARADA II

Grave 40
Cairn Circle



THENGAMARADA I

Grave 138
Stone Circle

KALLAMPALLYIAM

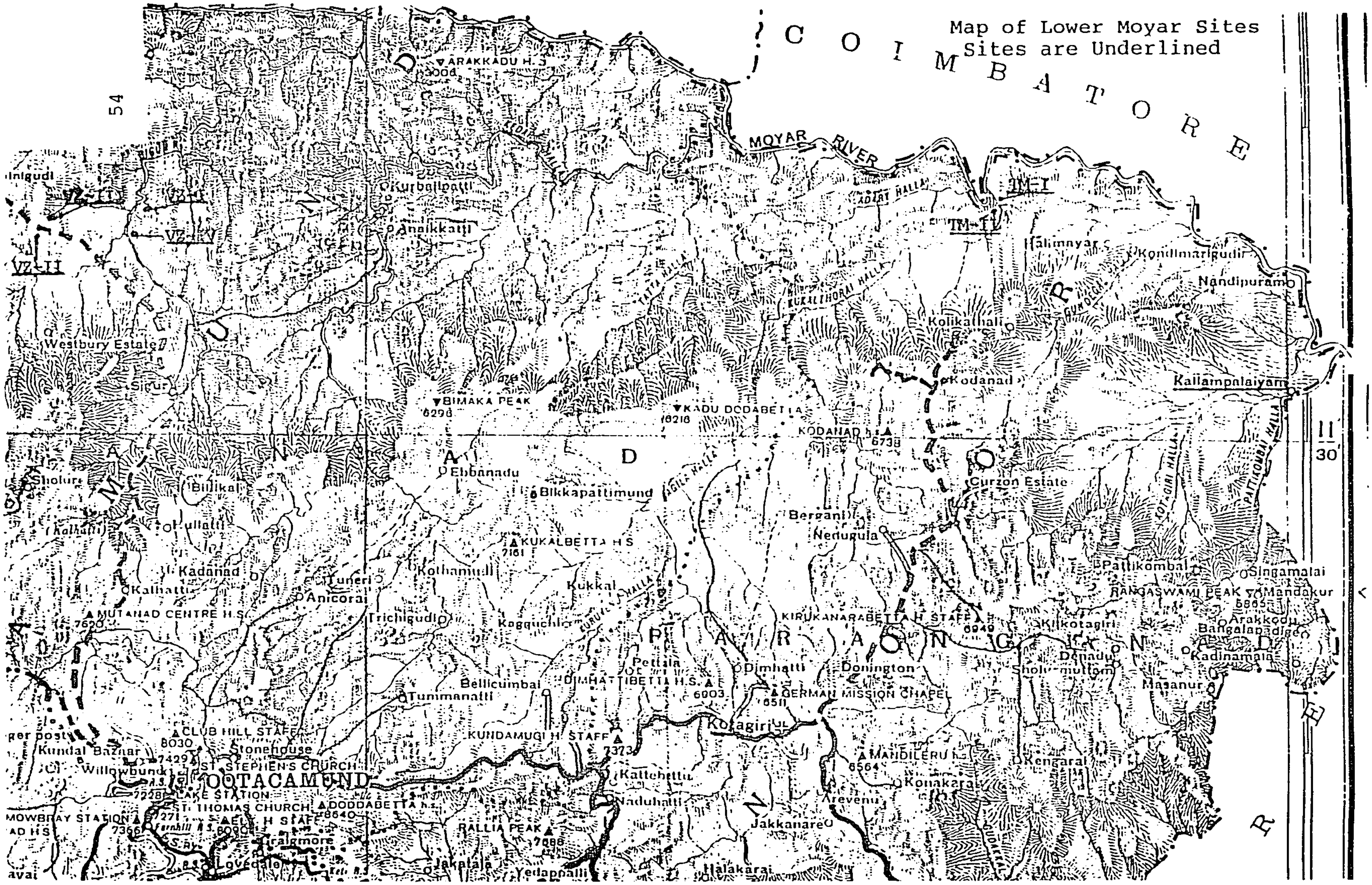
Grave 18
Cairn Circle
with menhirs

THENGAMARADA I

Grave 133
Stone Circle

Appendix C

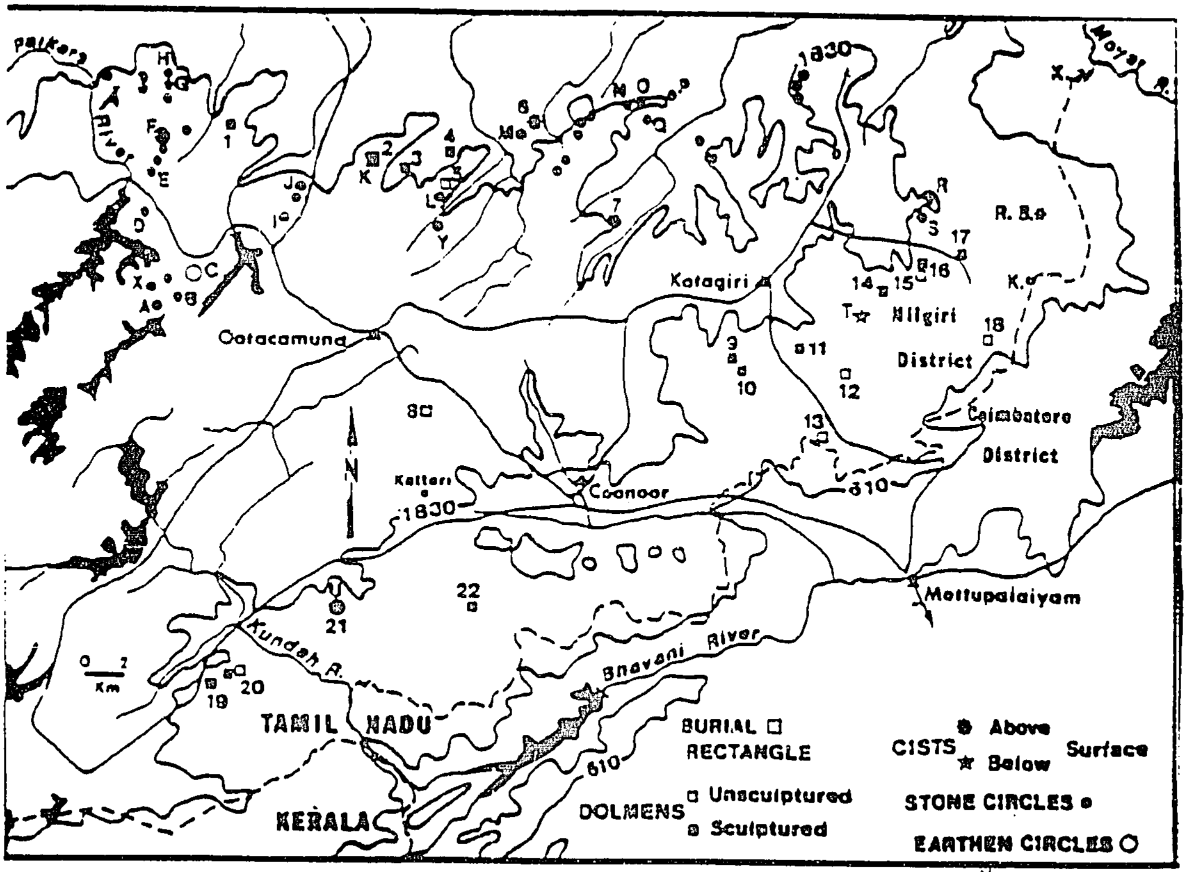
Map of Lower Moyar Sites



Map of Lower Moyar Sites
Sites are Underlined

Appendix D

Map of Nilgiri Archaeological Sites



Noble-1976

Nilgiri Archaeological Sites.

BIBLIOGRAPHY

Allchin, Raymond and Bridget.
1982 The Rise of Civilization in India and Pakistan. Cambridge University Press, New York.

Breeks, J. W.
1873 Primitive Tribes & Monuments of the Nilagiris. Madras Civil Service, Commissioner of the Nilagiris. Cultural Publishing House, 18-D Kamla Nagar, Delhi-110007.

Das, Gopi Nath.
1957 The Funerary Monuments of the Nilgiris. Deccan College Post graduate institute, Bulletin 18:ix-x, 140-58.

Deo, Bhalchandra Shantaram
1973 Problem of South Indian Megaliths. Kannada Research Institute, Karnataka University, Dharwar.

Ghosh, A.
1990 An Encyclopedia of Indian Archaeology, Vol II. E.J. Brill, Munshiram Manoharlal Publishing, New Delhi, India.

Gururaja Rao, B.K.
1972 The Megalithic Culture in South India. Prasaranga, University of Mysore.

Hockings Paul.
1974 Paikara: An Iron Age Burial in Southern India. Asian Perspectives 18:26-50.

Hockings, Paul.
1989 Blue Mountains- The Ethnography and Biogeography of a South Indian Region. Delhi Oxford University Press, Oxford New York.

Leshnik, Lawrence S.
1974 South Indian 'Megalithic' Burials The Pandukal Complex. Wiesbaden: Franz Steiner Verlag GmbH.

Manhalingam, T.V.
1978 South Indian Archaeology, Epigraphy, Architecture and Sculpture (With Special Reference to Tamil Nadu). Published by The Archaeological Society of South India Government Museum, Madras-600 008.

Narasimhaiah, B.
1980 Neolithic and Megalithic Cultures in Tamil Nadu. Sundeep Prakashan, Delhi.

Niak, Iqbal Abdul Razak
1966 The Culture of the Nilgiri Hills with its Catalogue Collection at the British Museum. London:Ph.D. dissertation, University of London.

Noble, William A.
1976 Nilgiri Dolmens (South India) Anthropos 71:90- 128.

Purushottam, Singh
1970 Burial Practices in Ancient India. Banaras Hindu University. Prithivi Prakashan.

Ramachandran, K.S.
1971 Archaeology of South India-Tamil Nadu Sundeep Prakashan Delhi, Bibliography on Indian Megaliths, Tamil Nadu.

Ramanna, H.S
1983 Megaliths of South India and South East Asia A Comparative Study. New Era Publications Madras 600 8.

Singh, R.L
1971 India: A Regional Geography. National Geographic Society of India, Bhargava Bhustan Press, Varanas India.

Spate, O.H.K, A.T.A. Learmonth and B.H. Farmer
1954 India, Pakistan and Ceylon-The Regions Methuen & Co LTD, London.

Walhouse, J.M.
1873 On Some Formerly Existing Antiquities on the Nilgiris. Indian Antiquary. Vol.II, pp.275-278.

Zagarell, Allen
1992 Personal Contact

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Oversize maps and charts are filmed in sections in the following manner:

LEFT TO RIGHT, TOP TO BOTTOM, WITH SMALL OVERLAPS

The following map or chart has been refilmed in its entirety at the end of this dissertation (not available on microfiche). A xerographic reproduction has been provided for paper copies and is inserted into the inside of the back cover.

Black and white photographic prints (17" x 23") are available for an additional charge.

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Map 1

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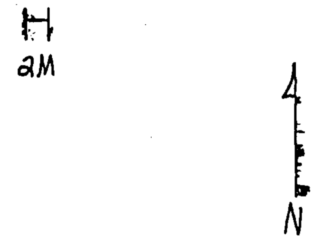

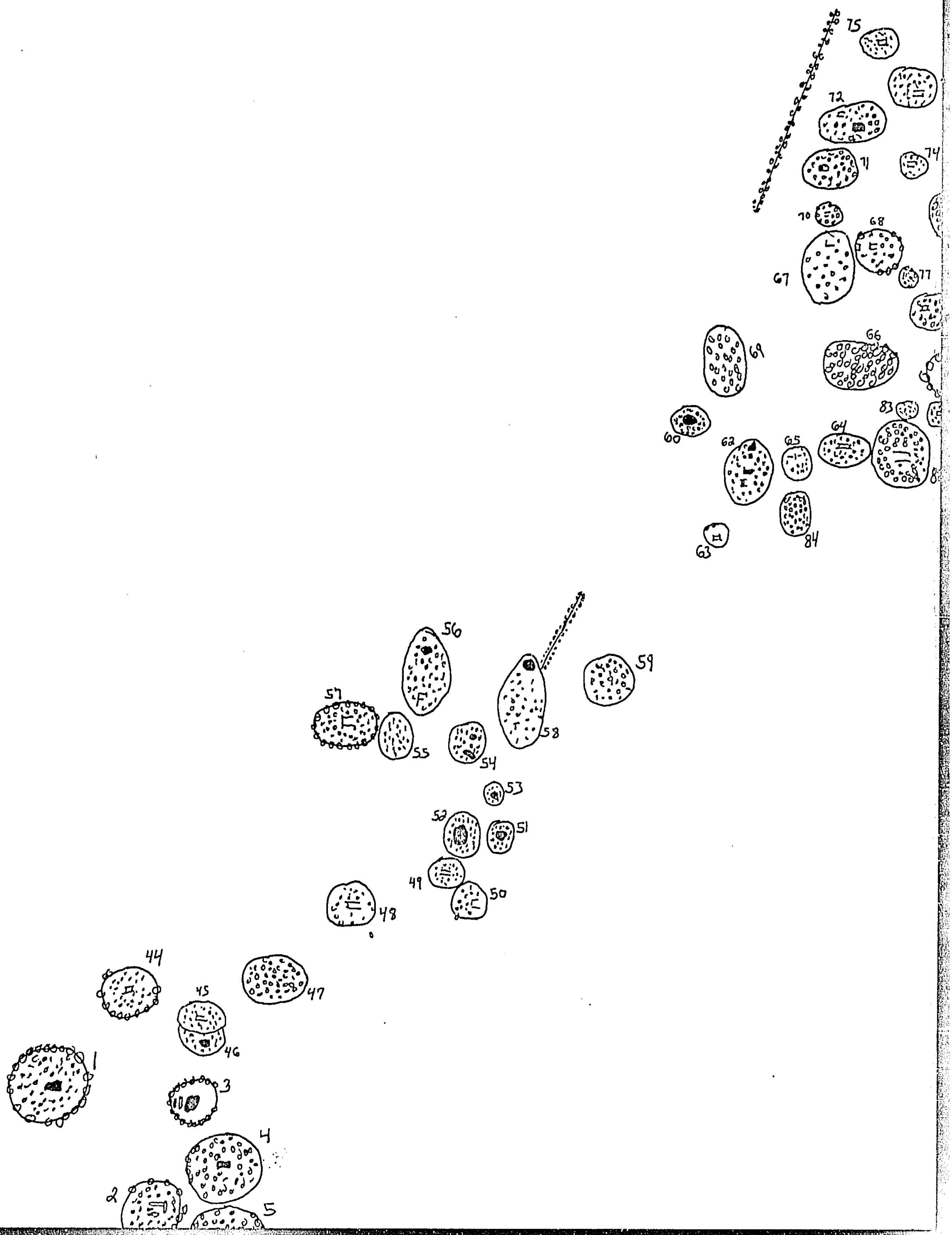

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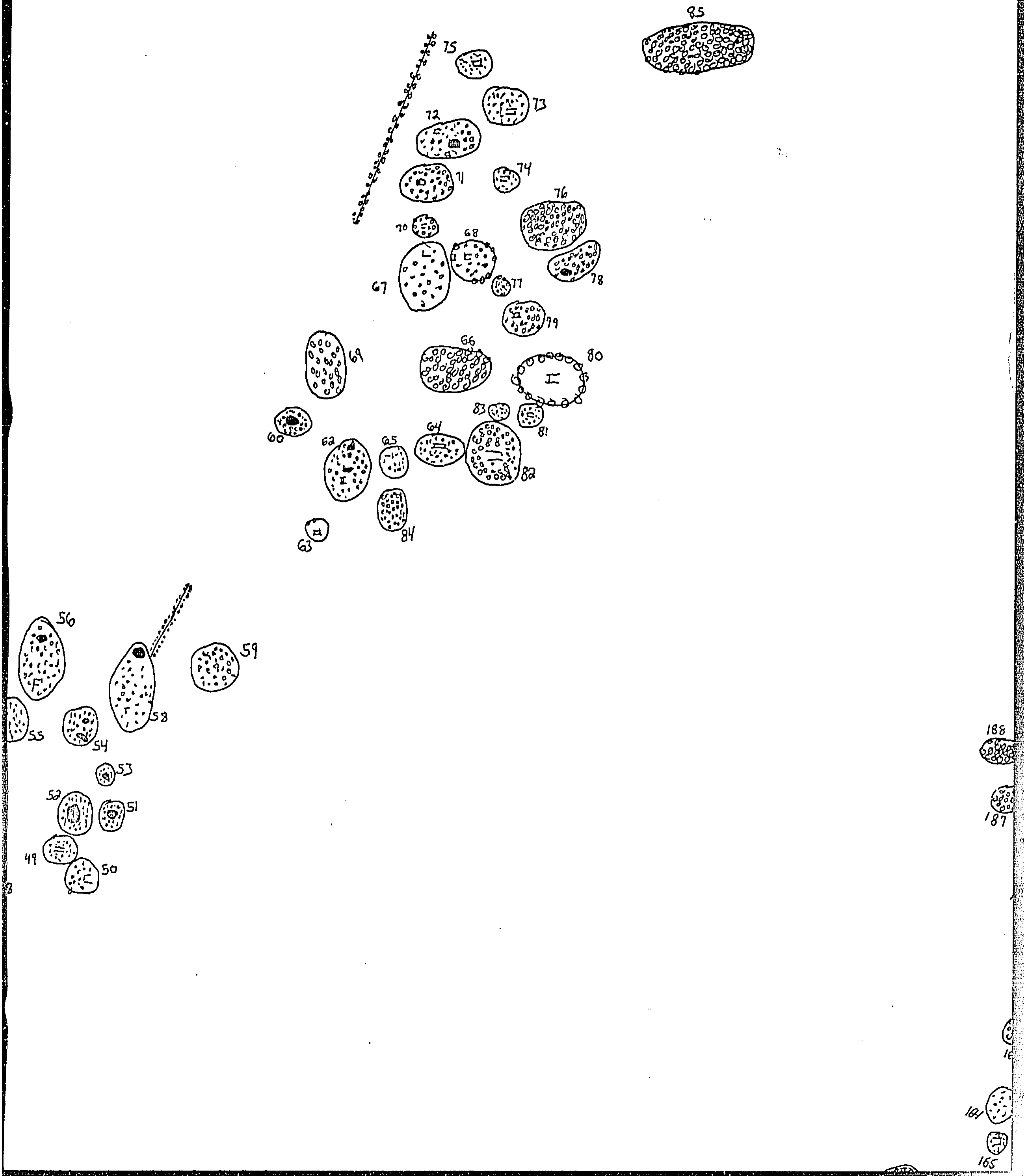
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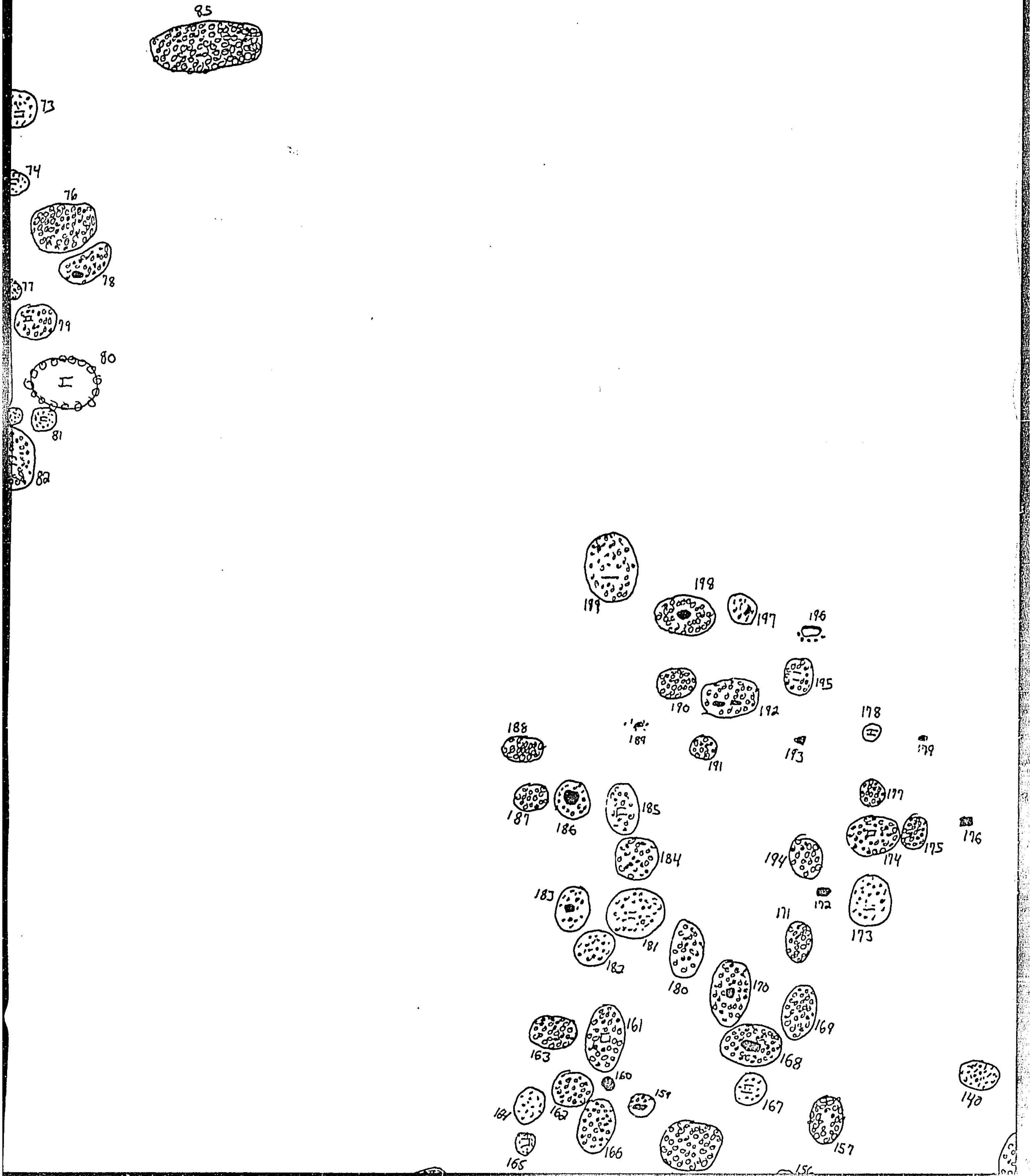
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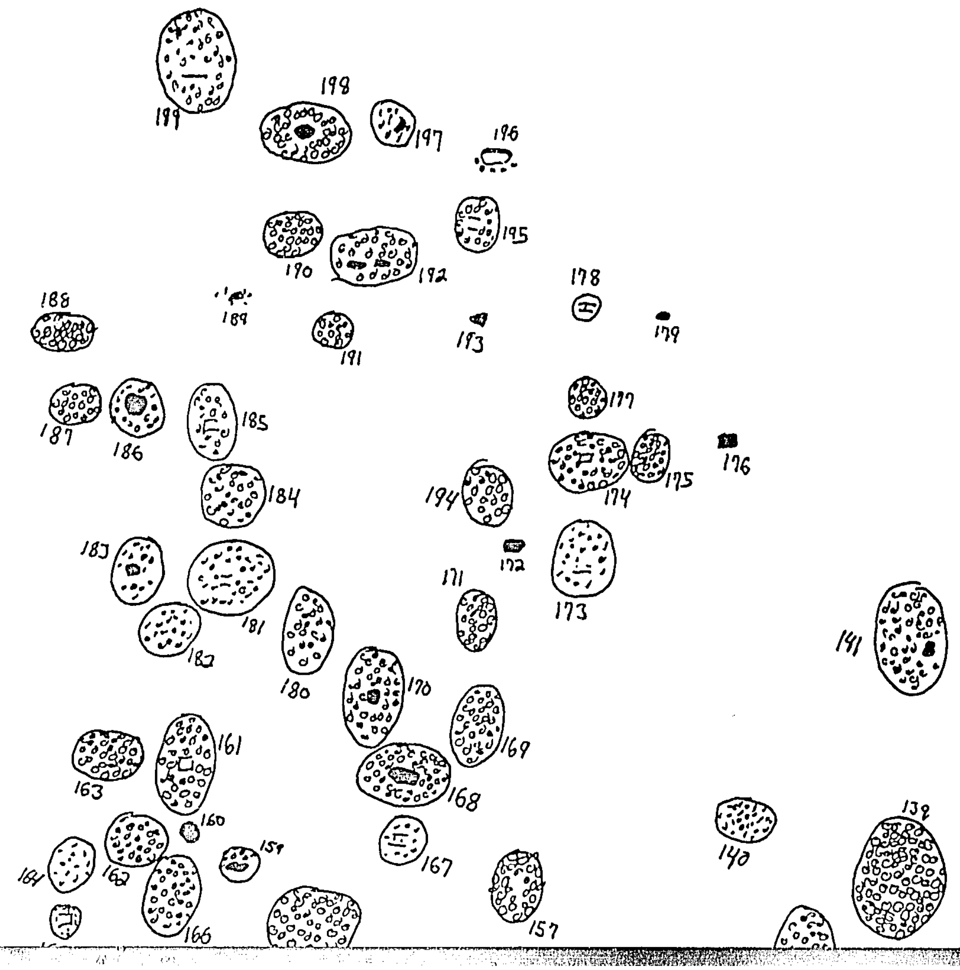
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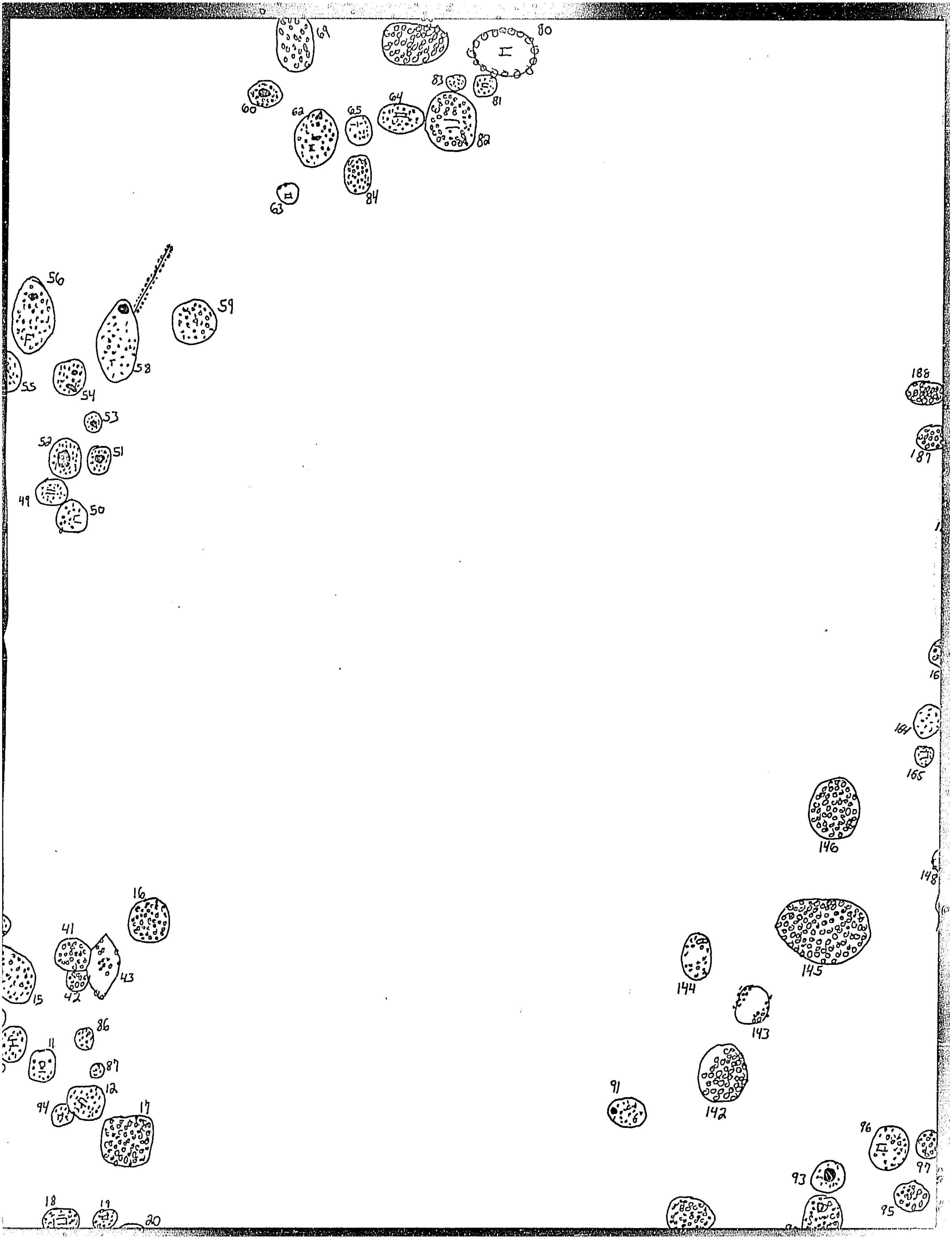

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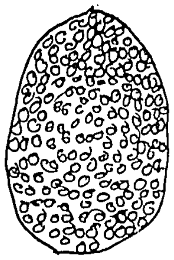

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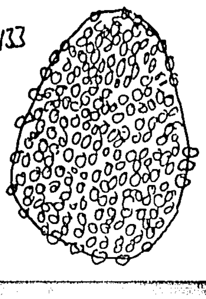

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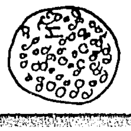

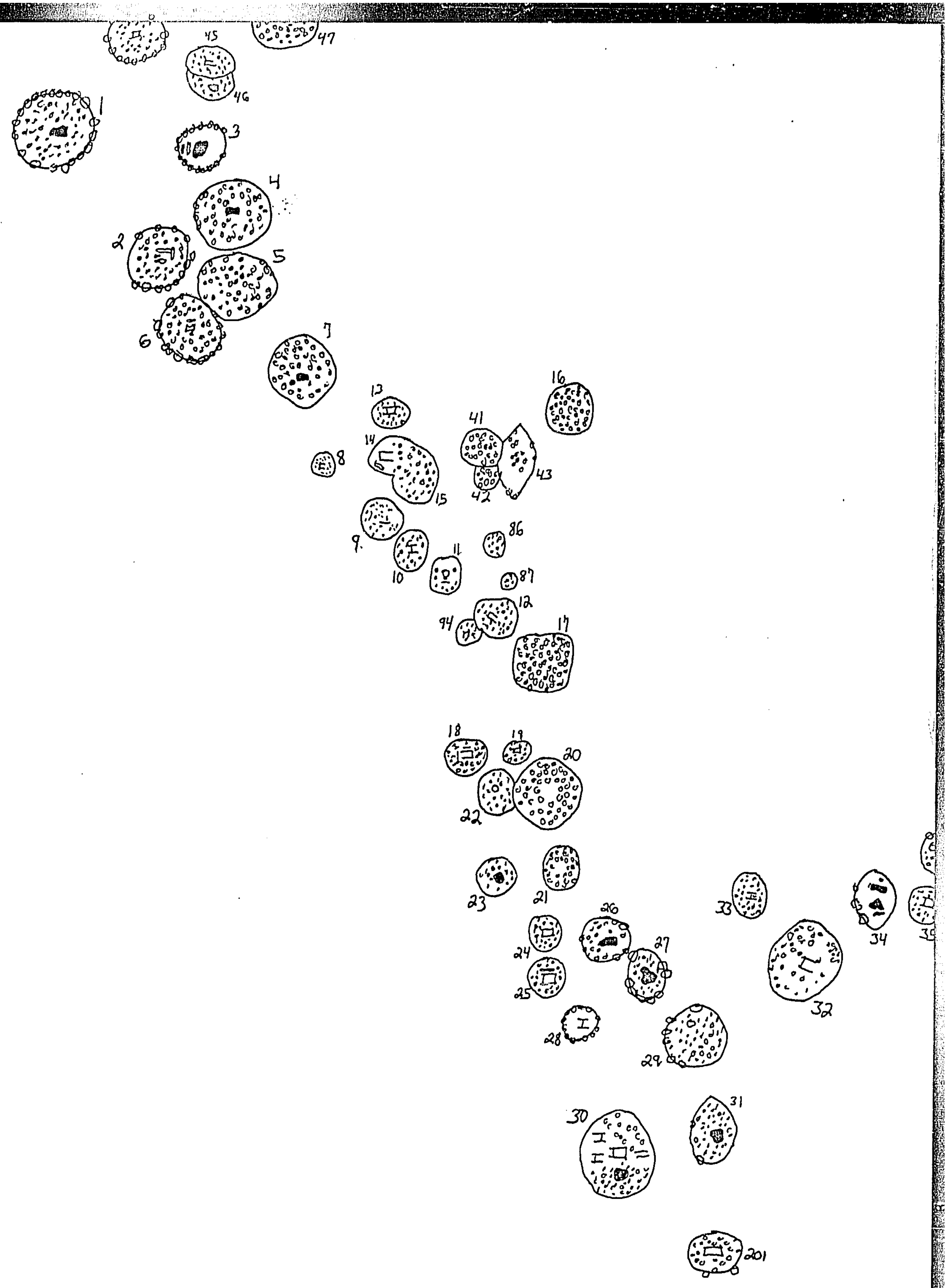
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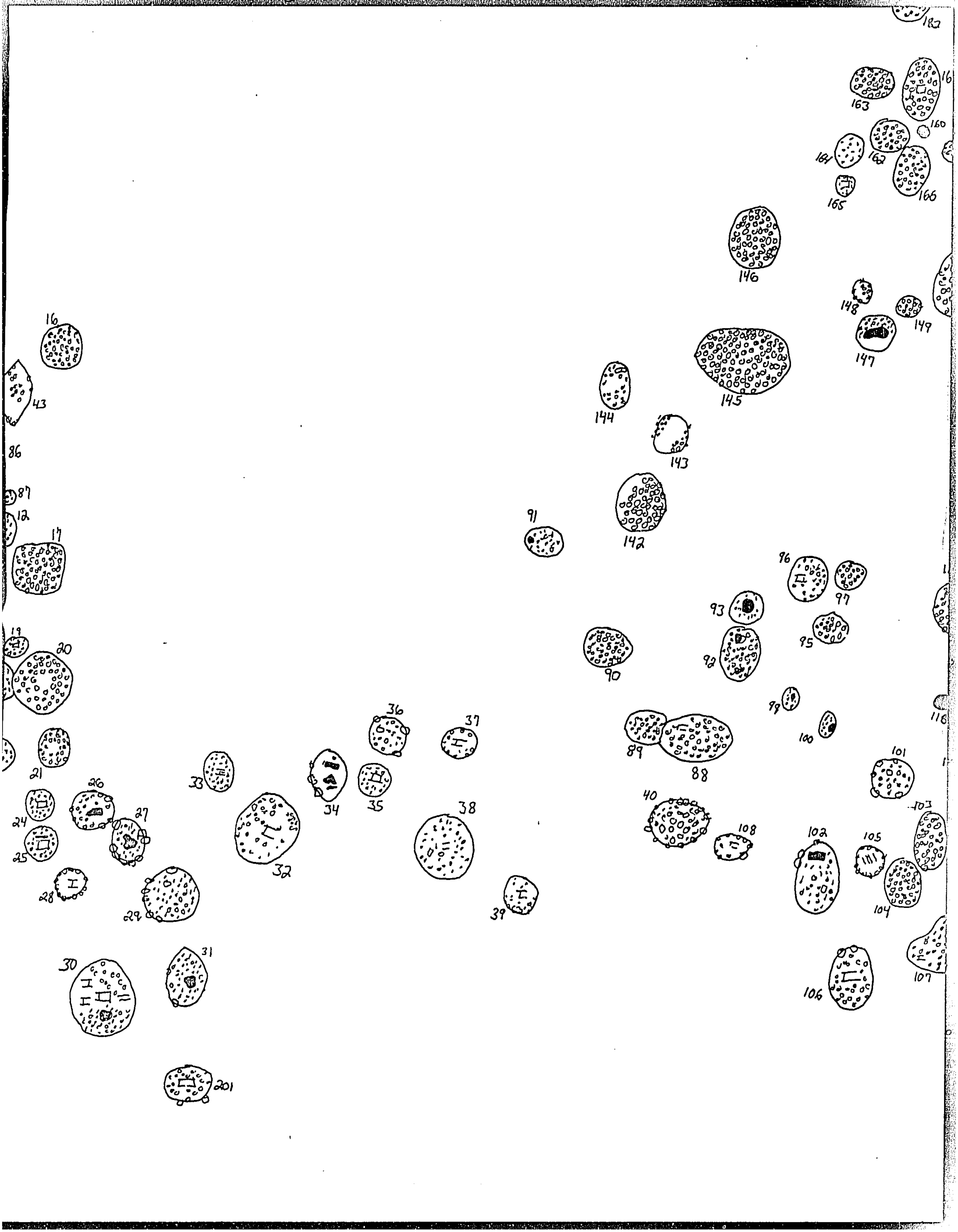

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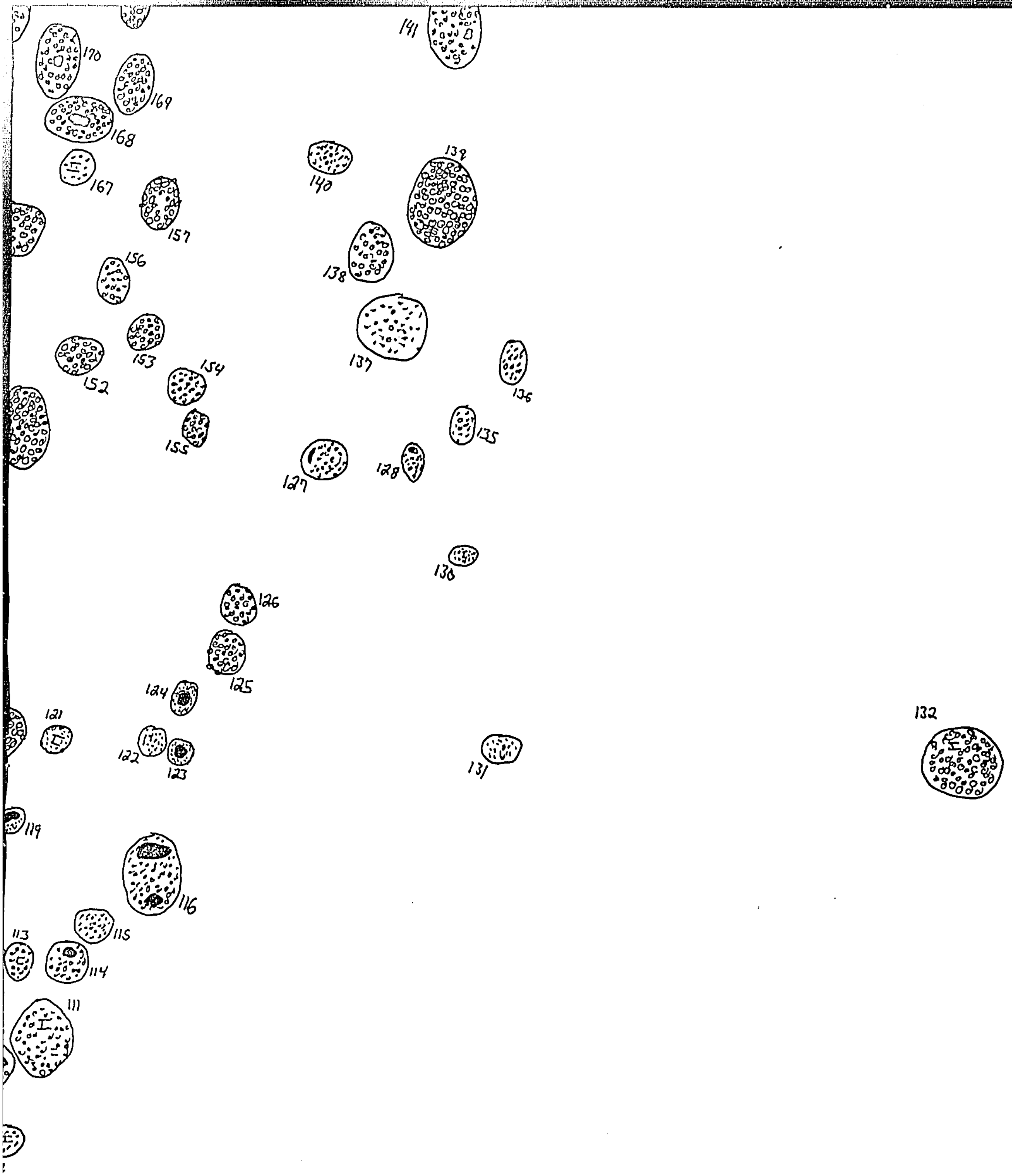
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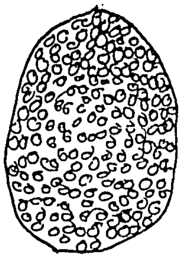

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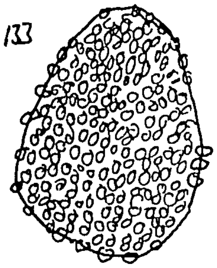

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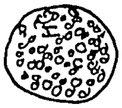

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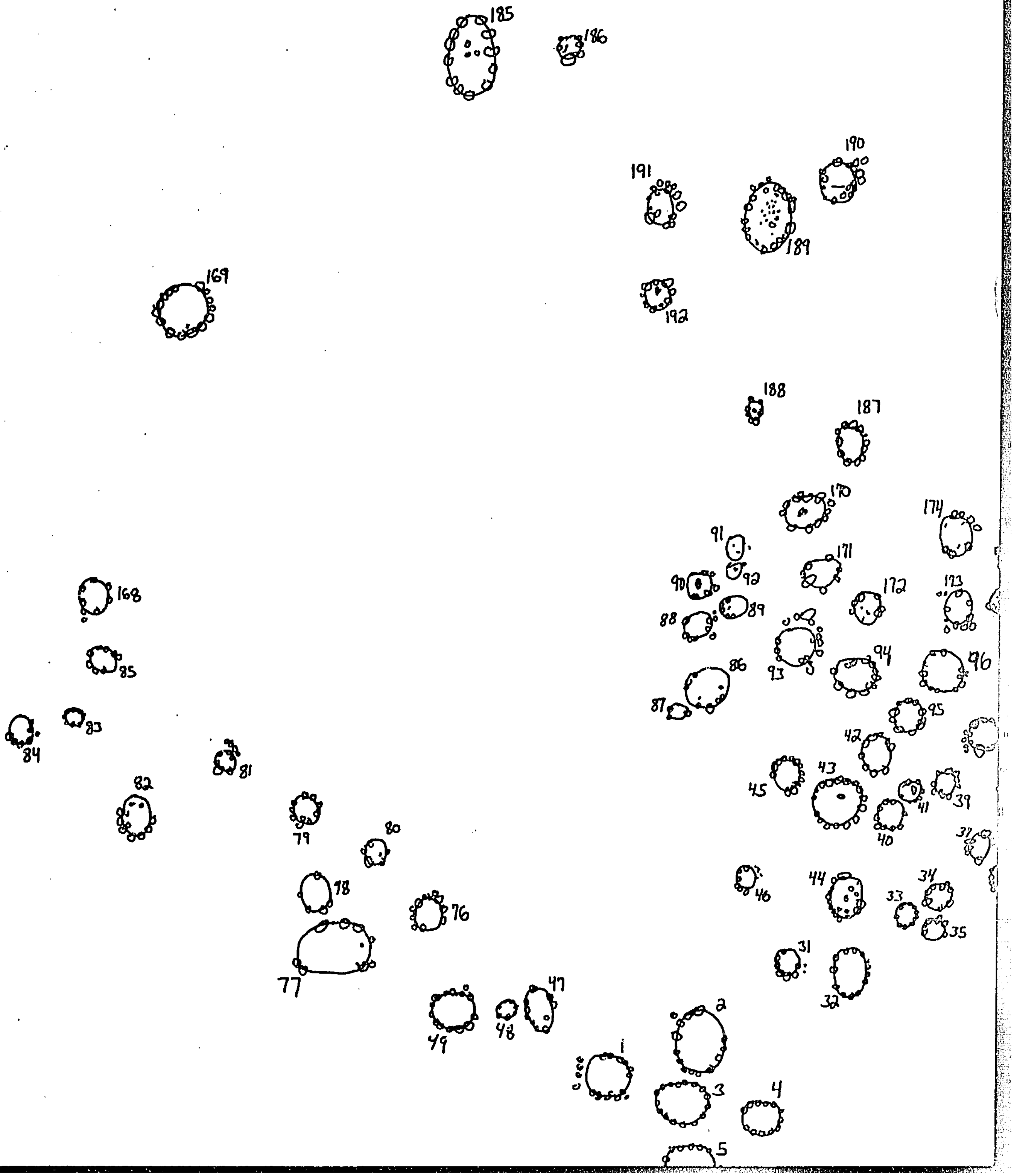
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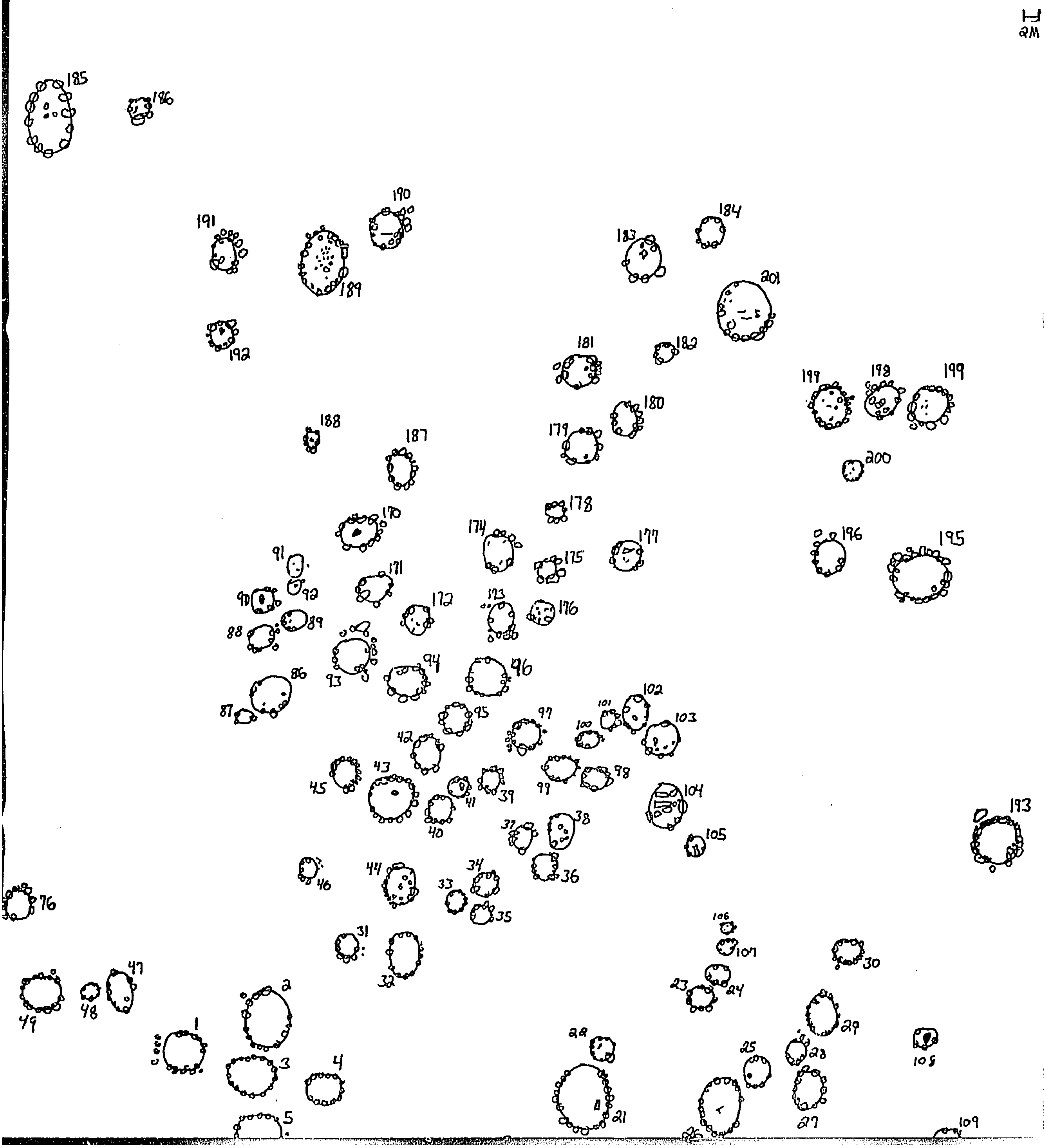

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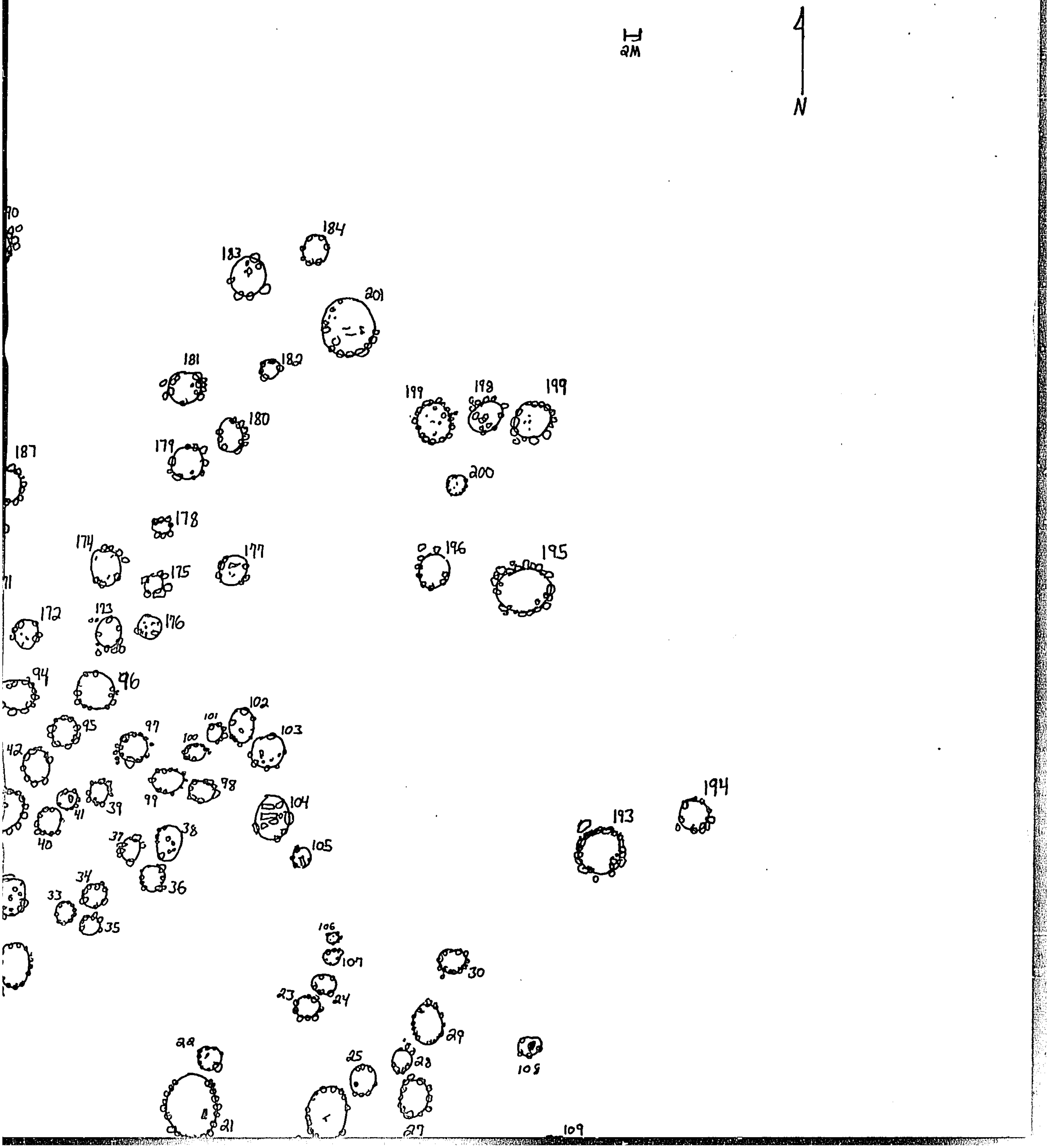

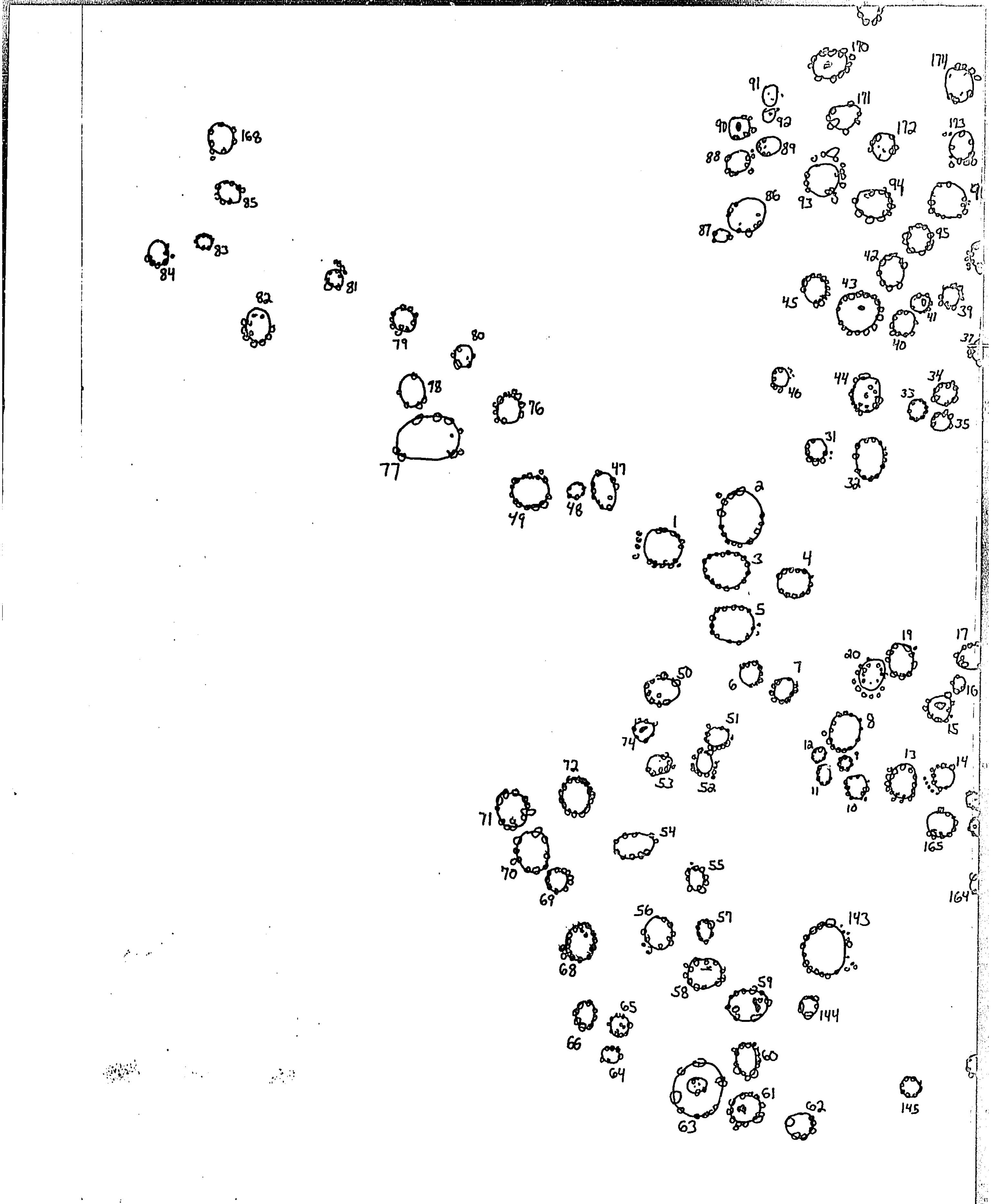
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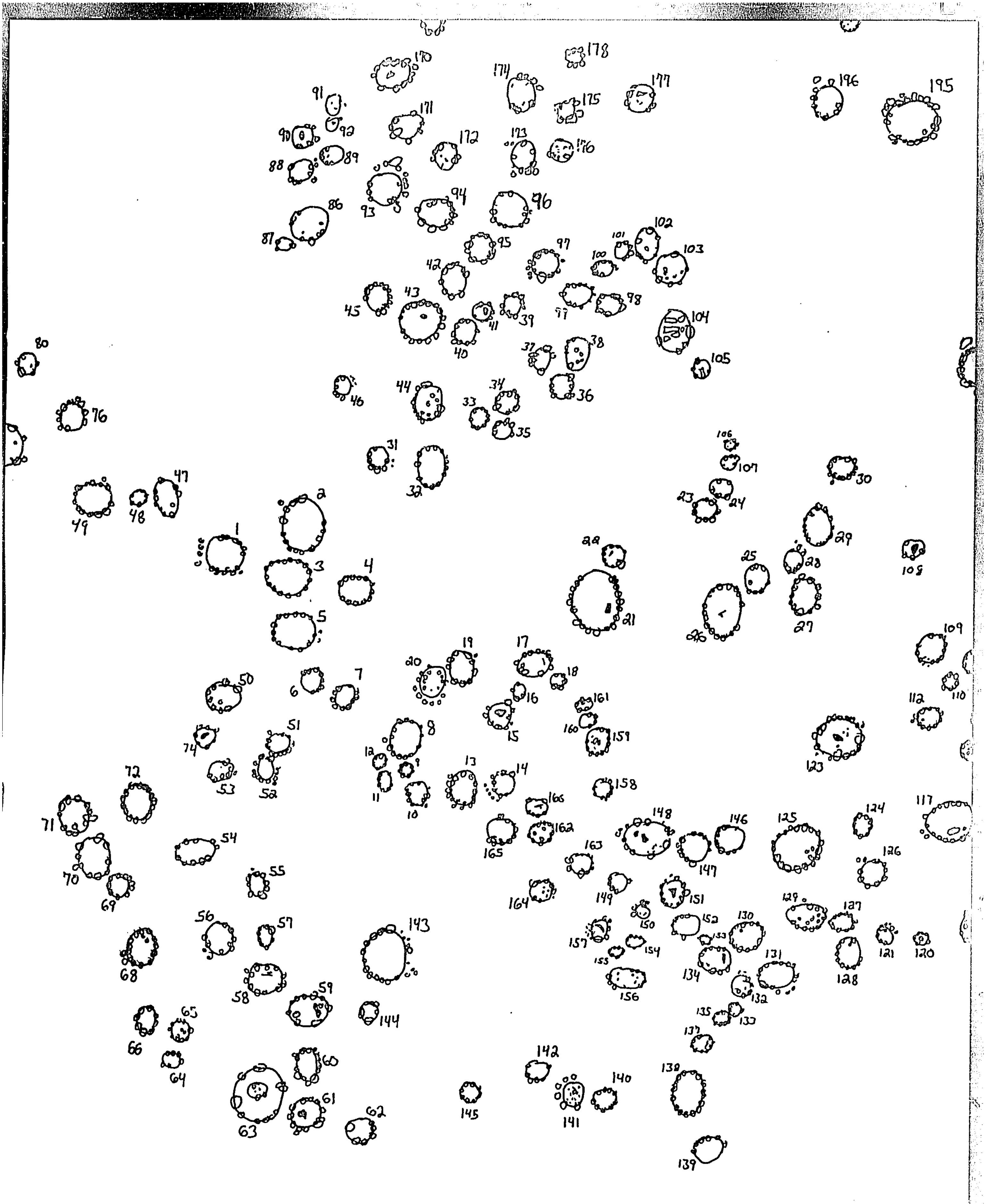

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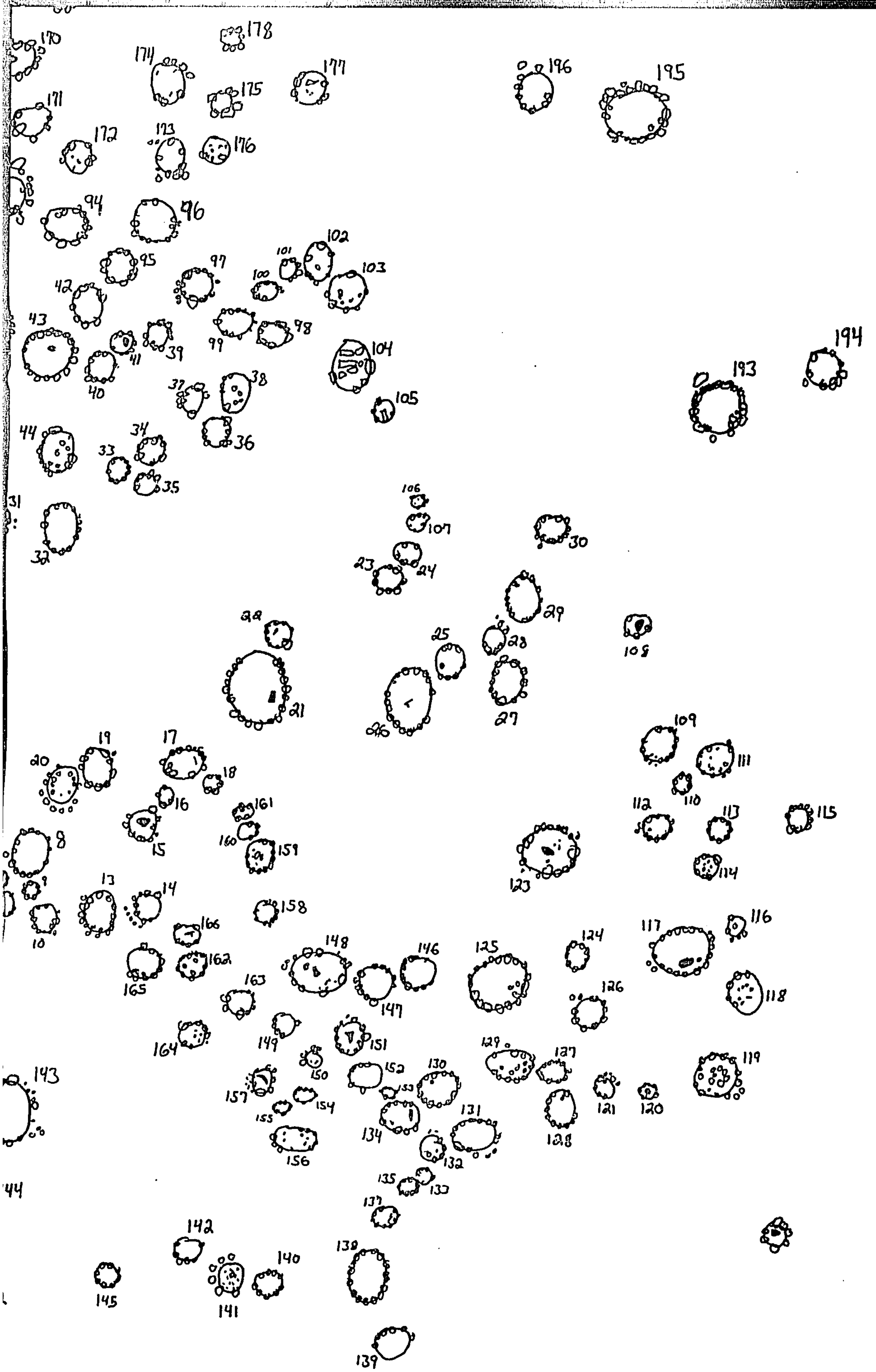

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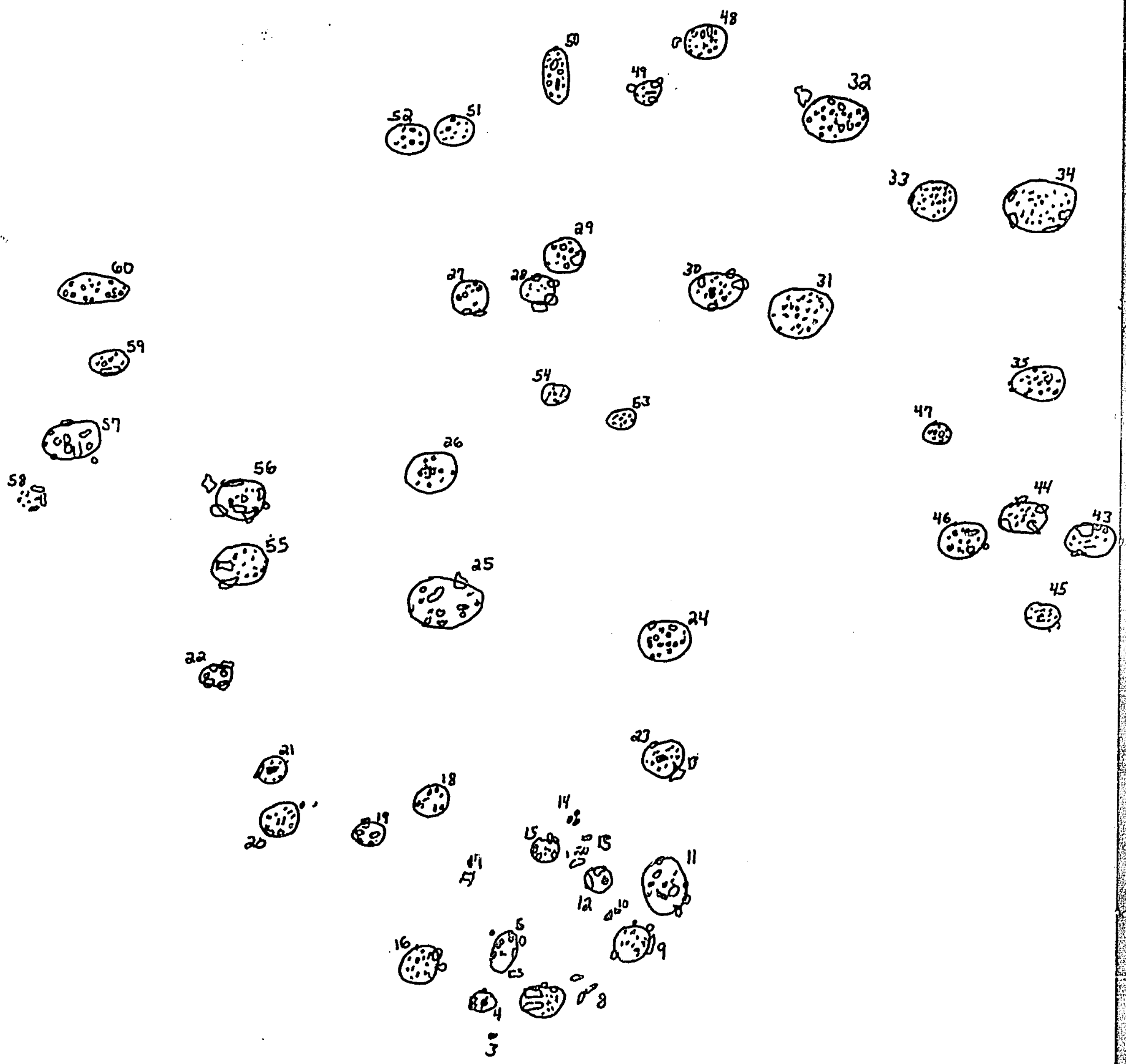
Map 3 KAL



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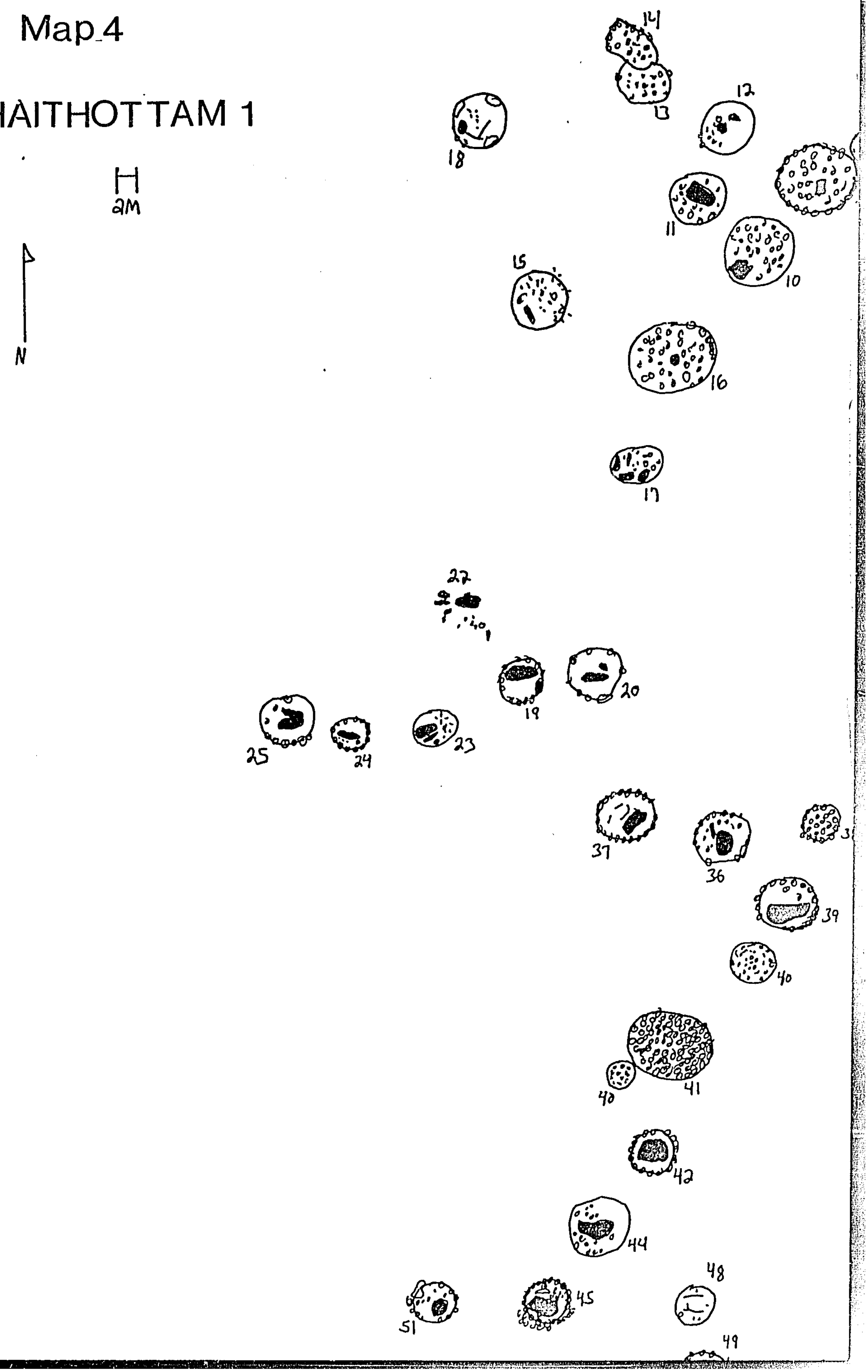
Map 4

VAZHAITHOTTAM 1



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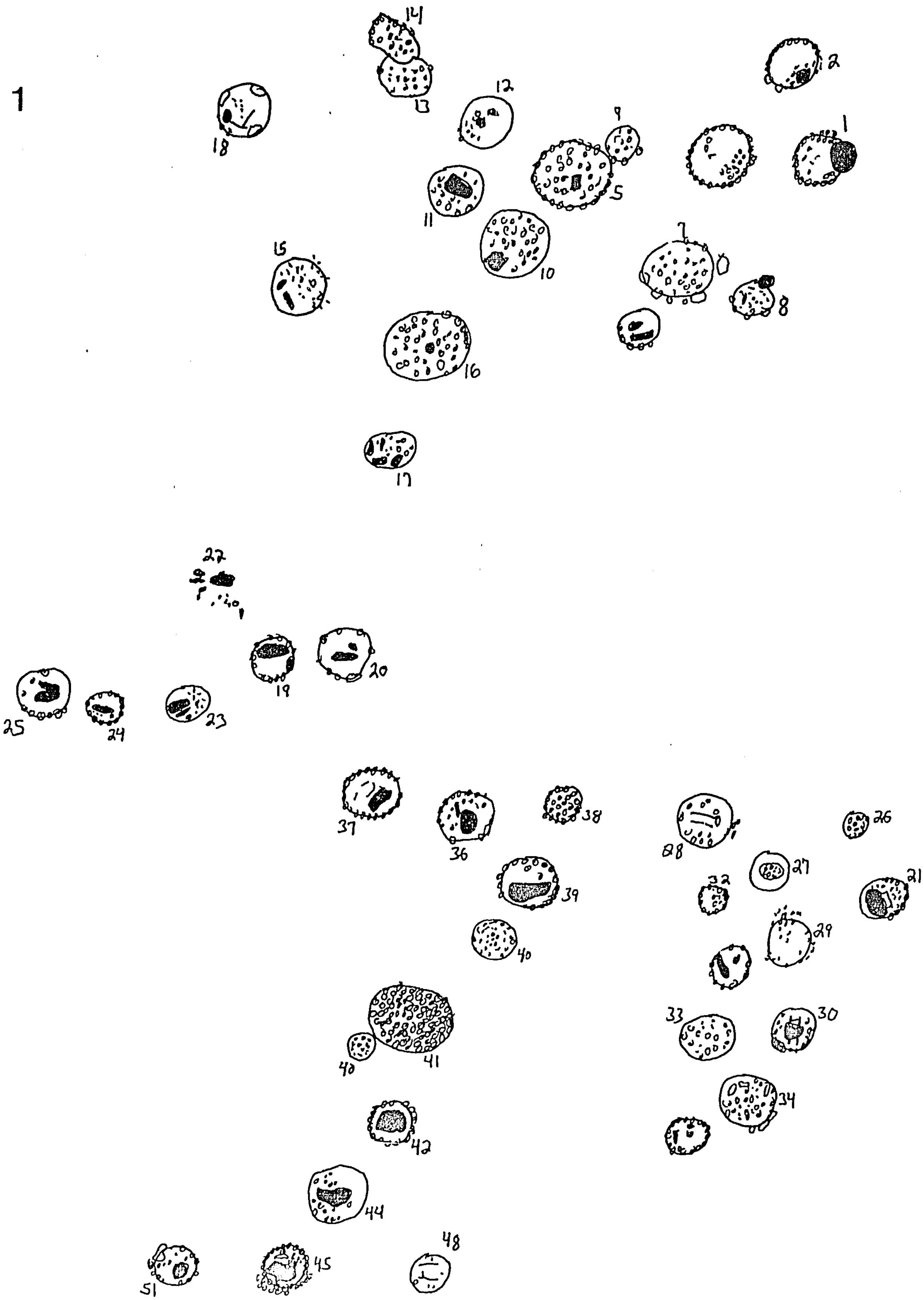

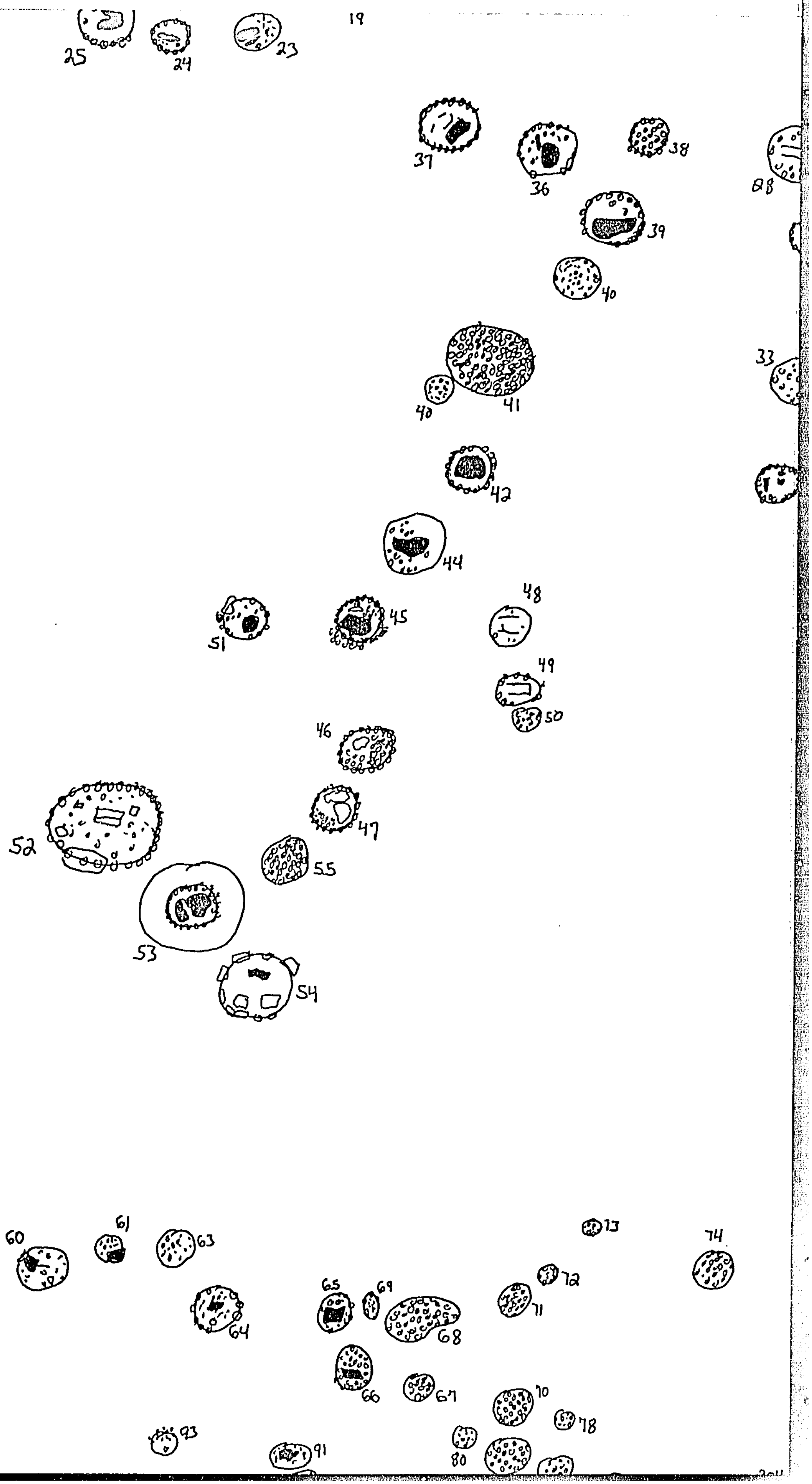
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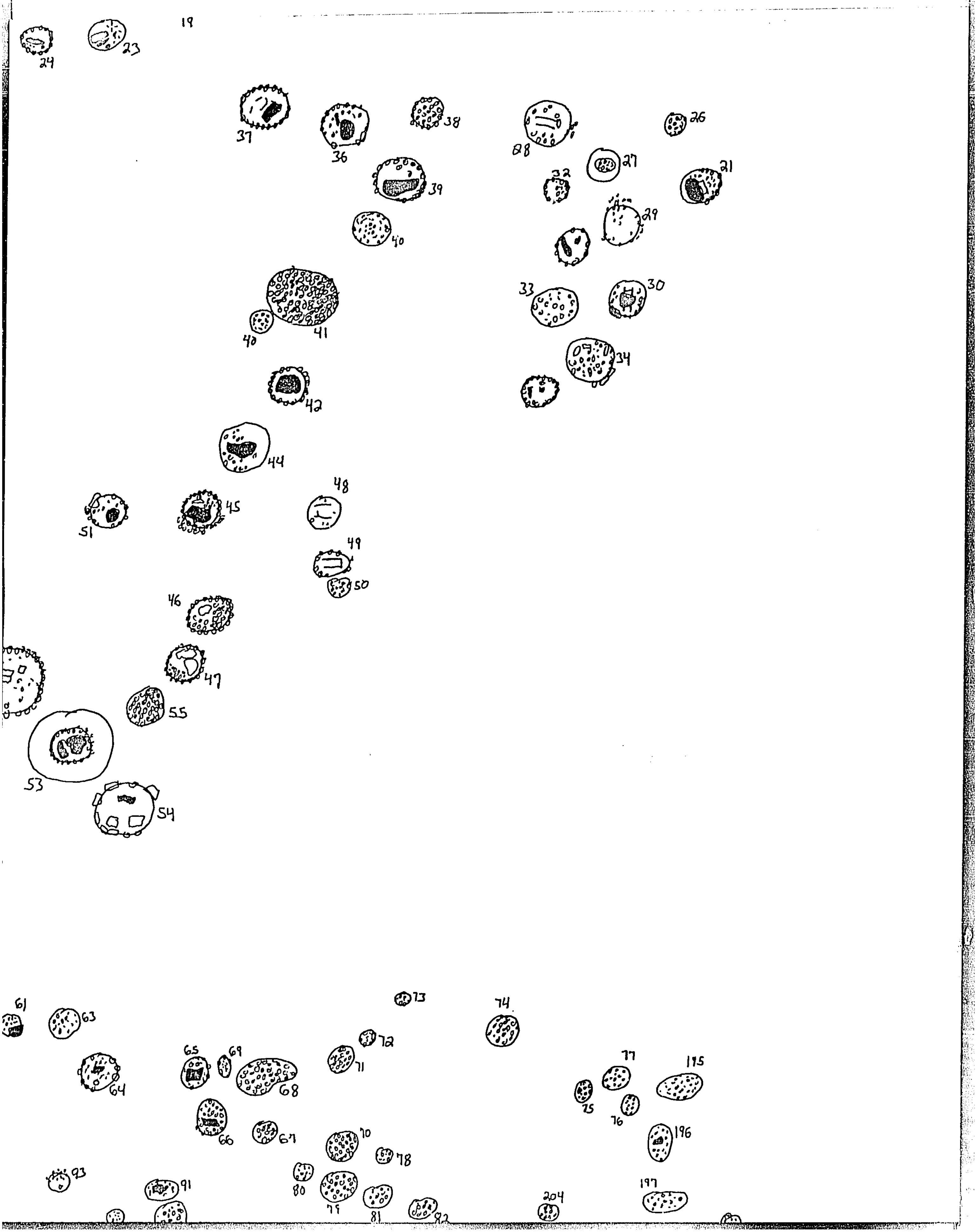
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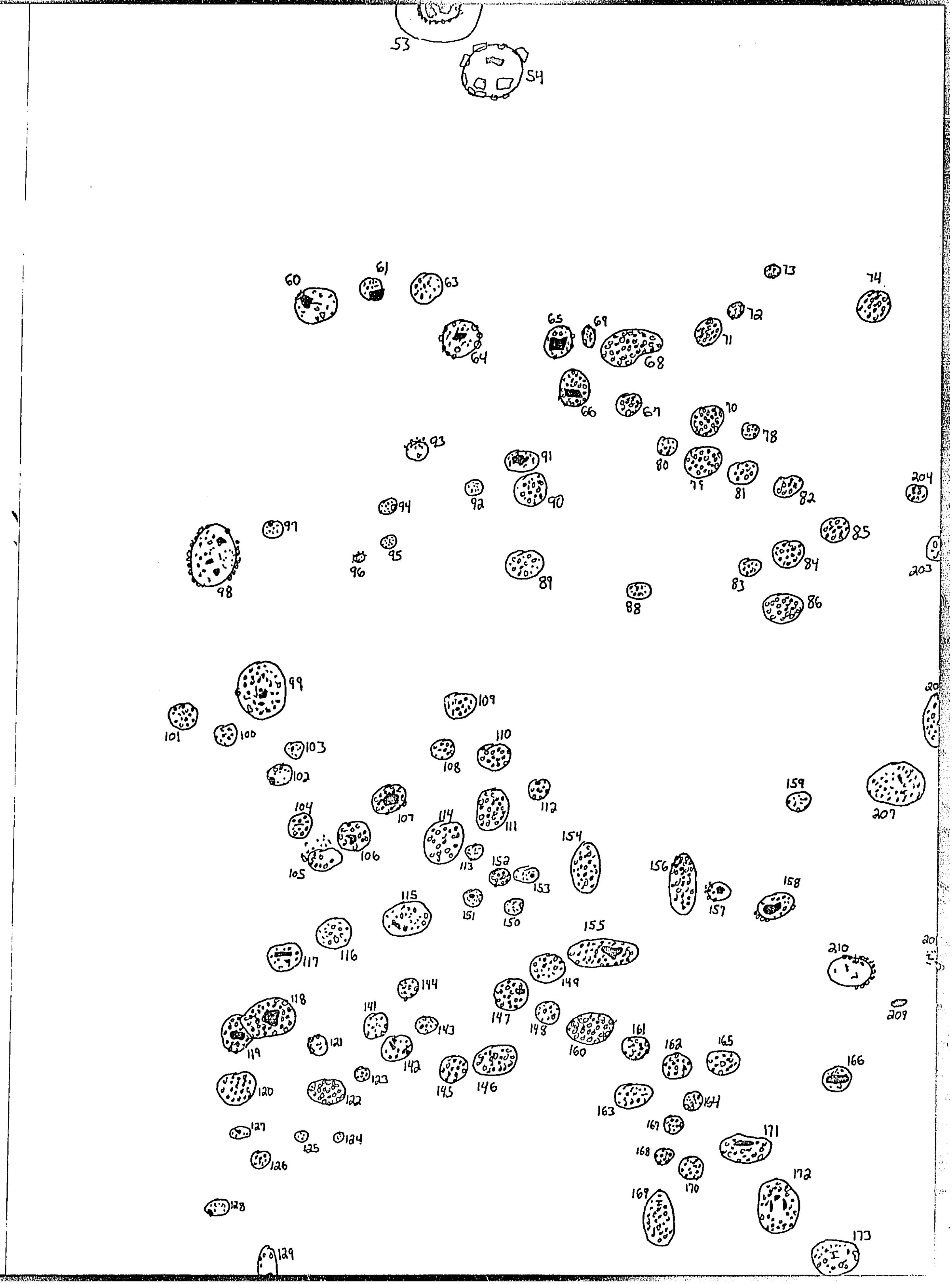
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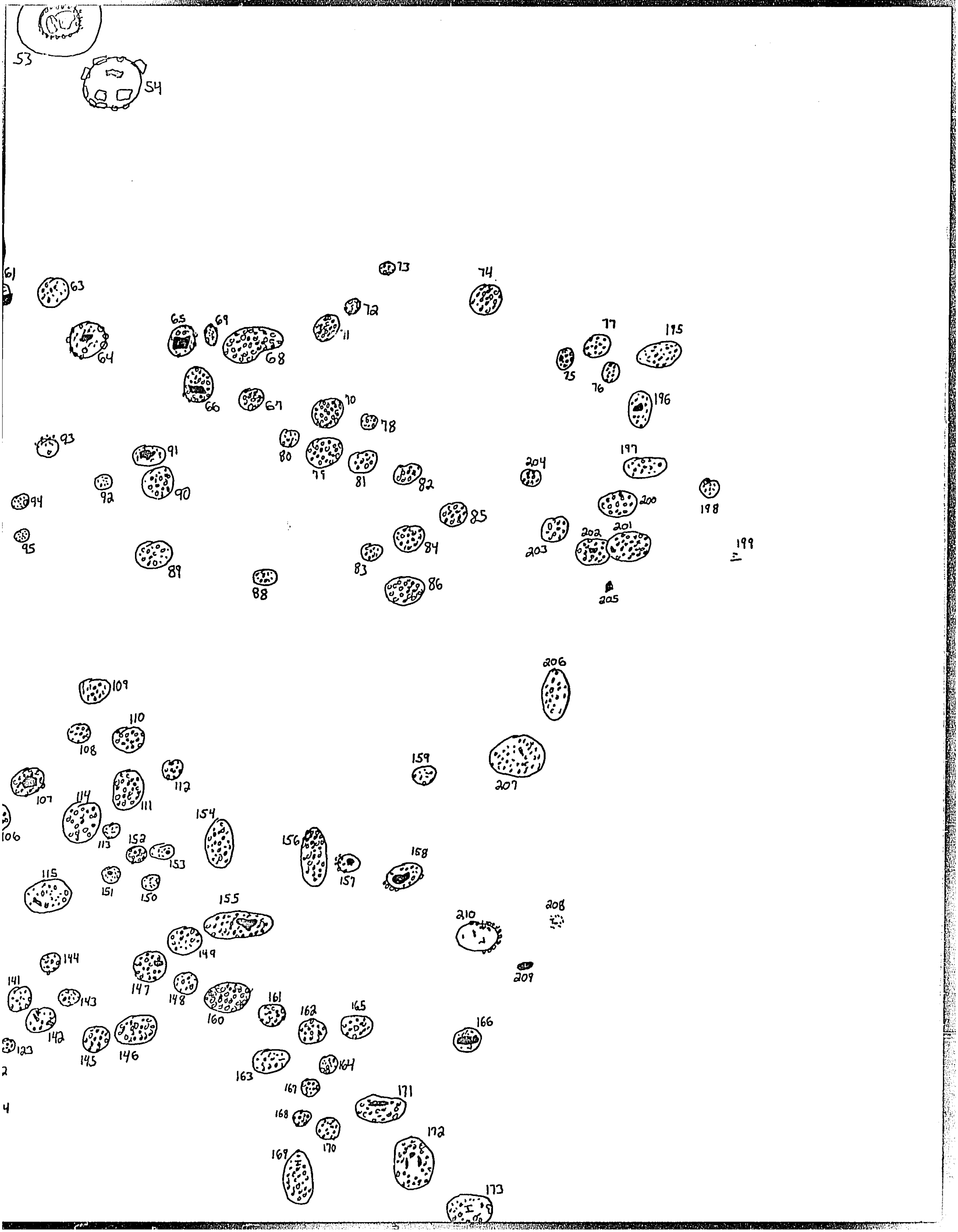
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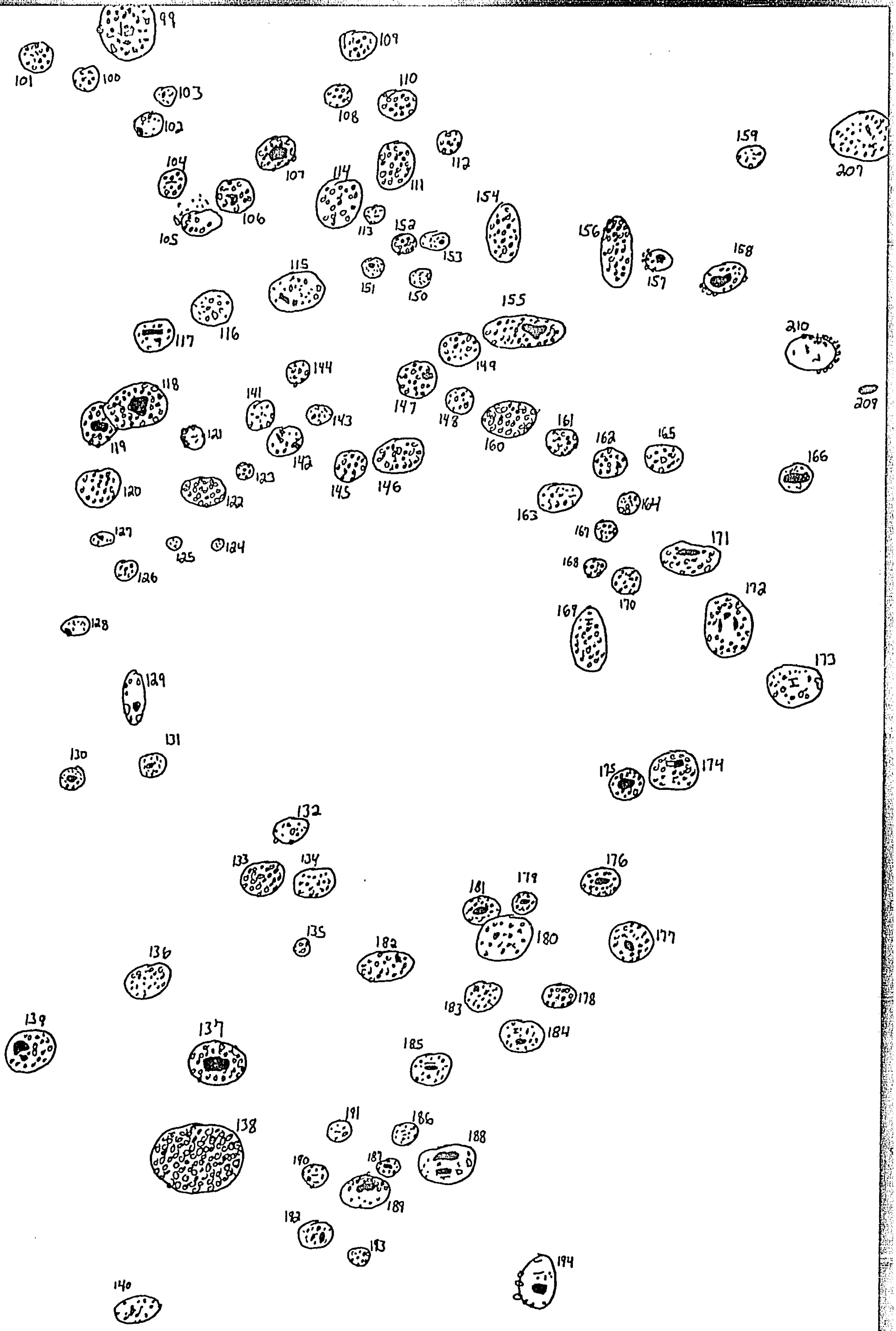
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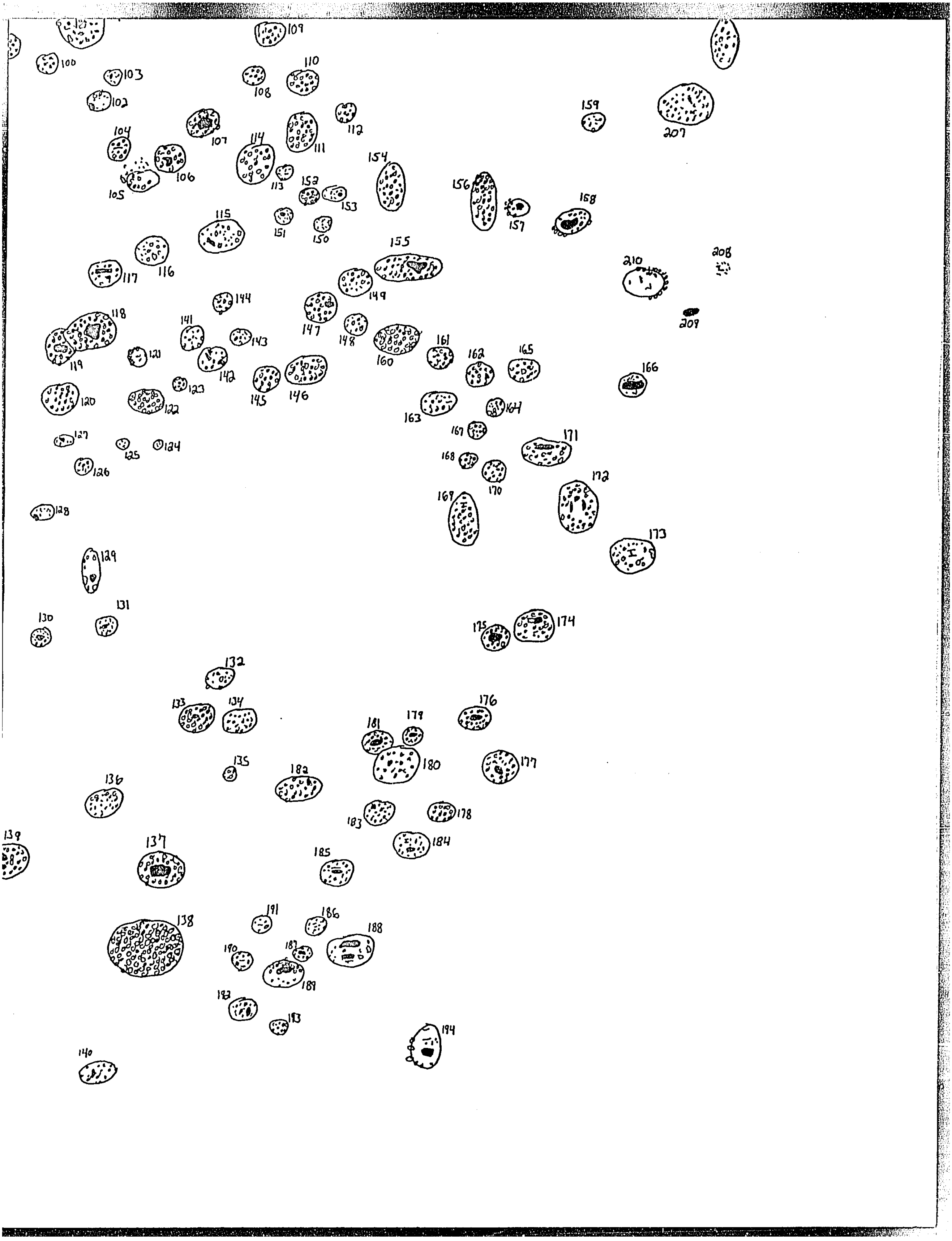
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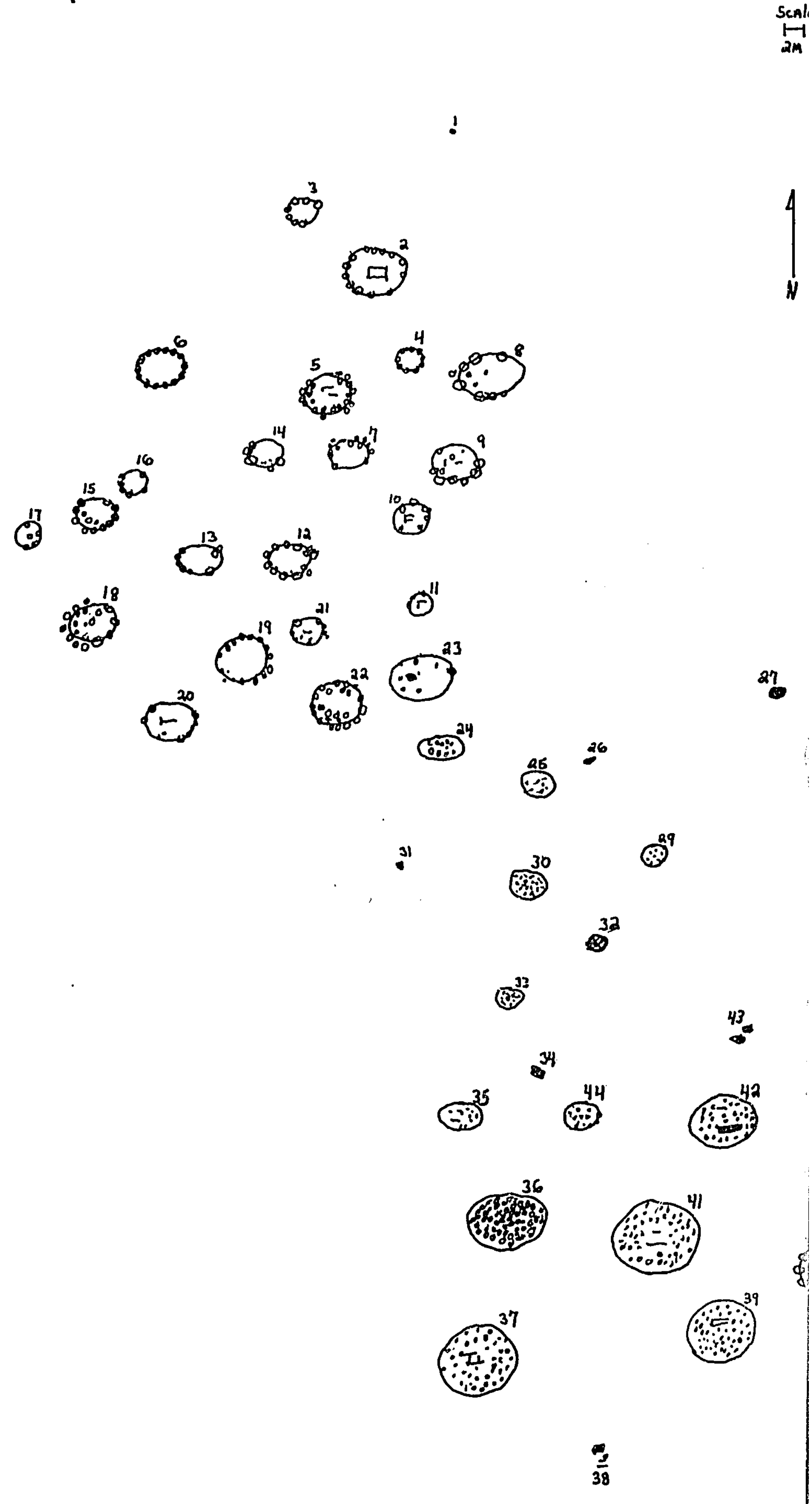
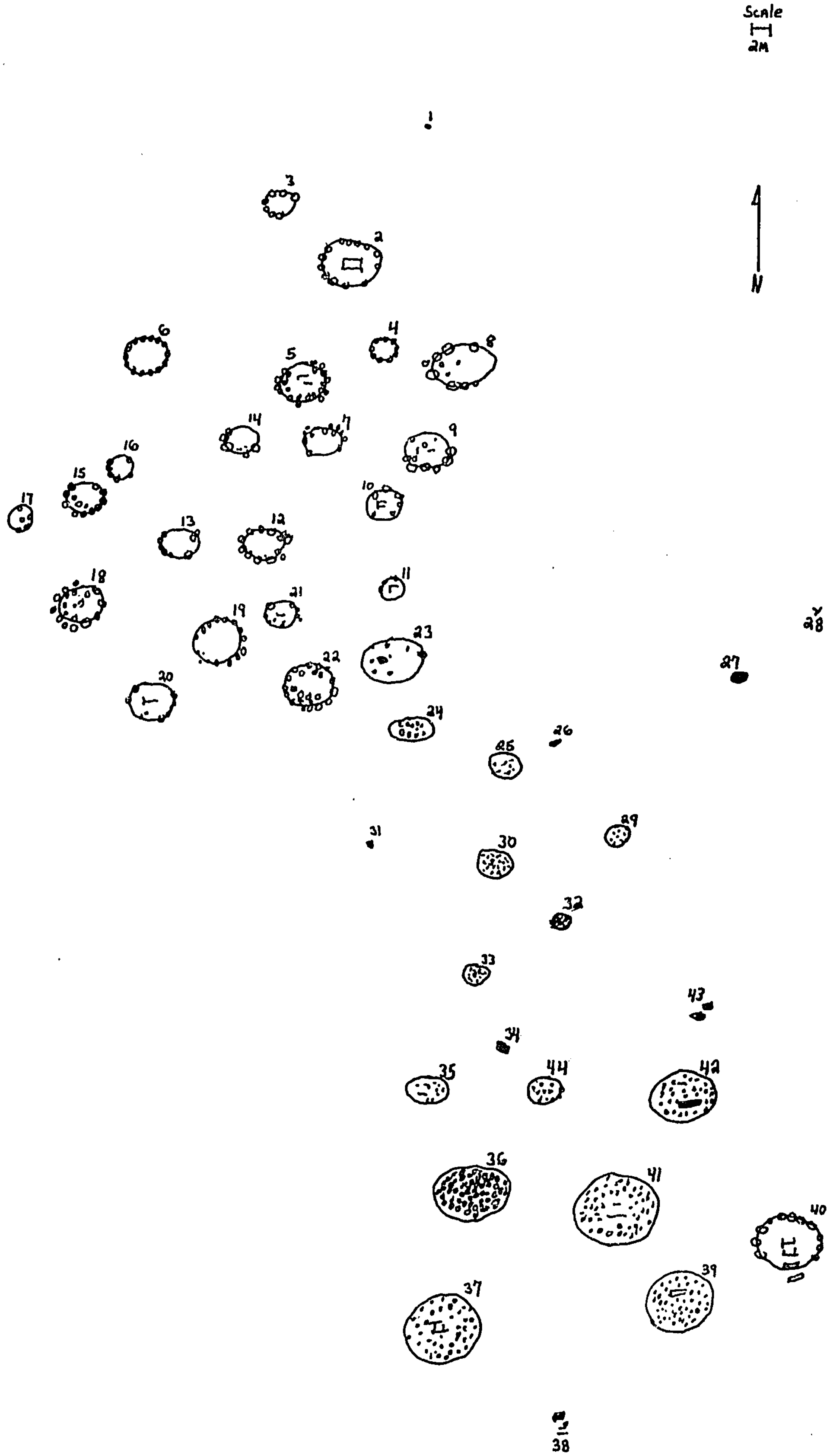
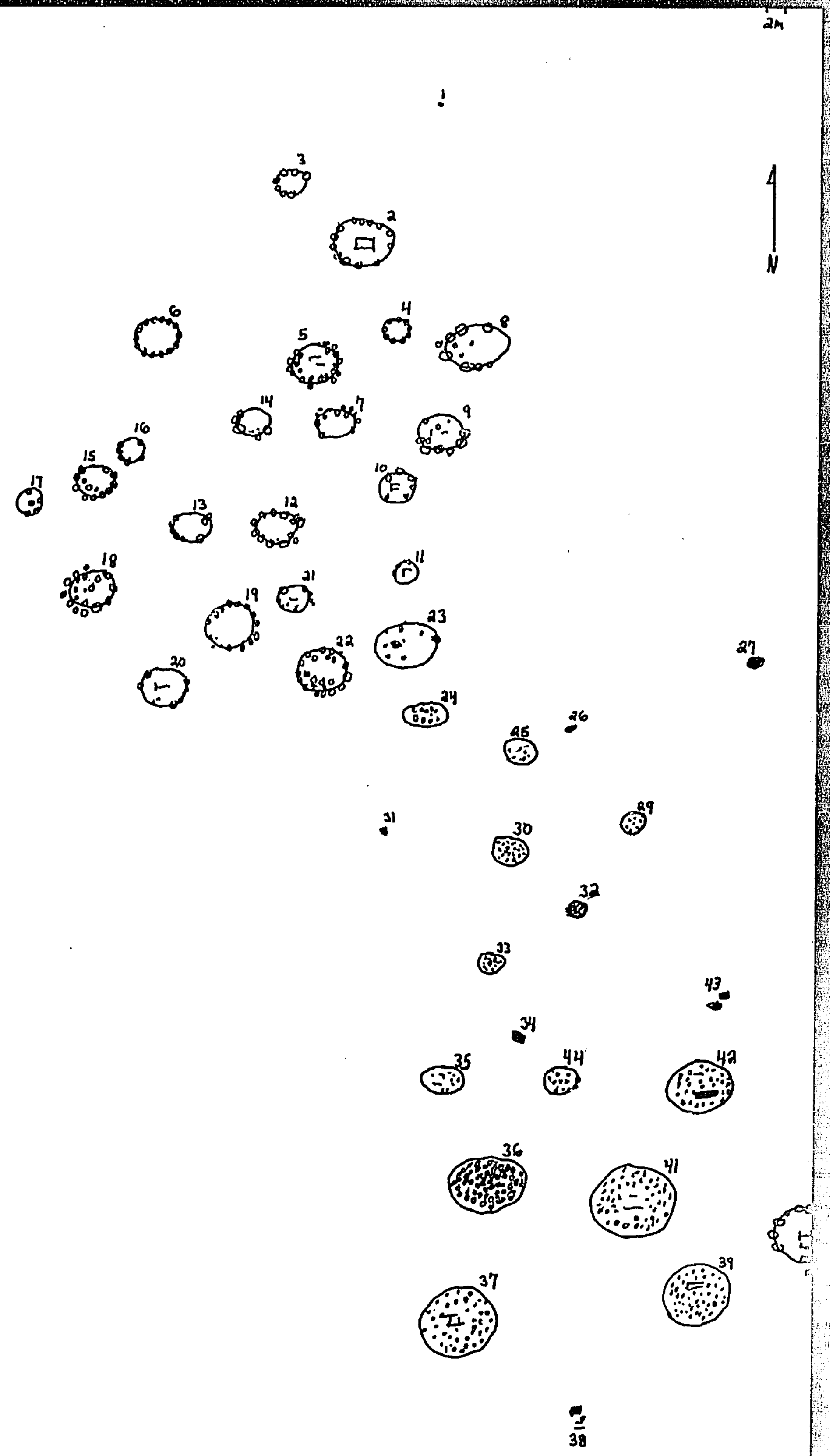
Map 5 VAZHAITHOTTAM 2



Map 5 VAZHAITHOTTAM 2

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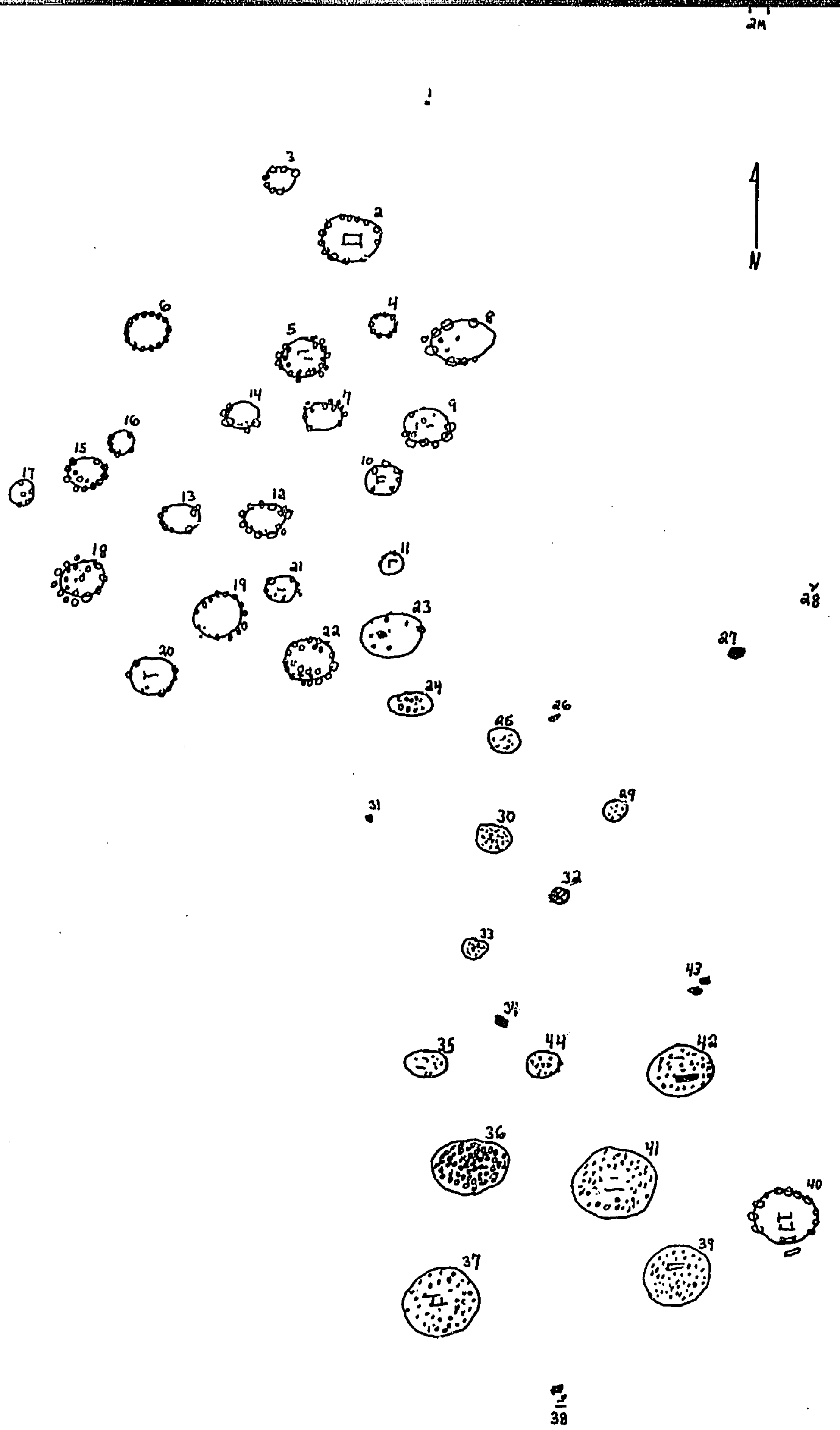

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Map 6

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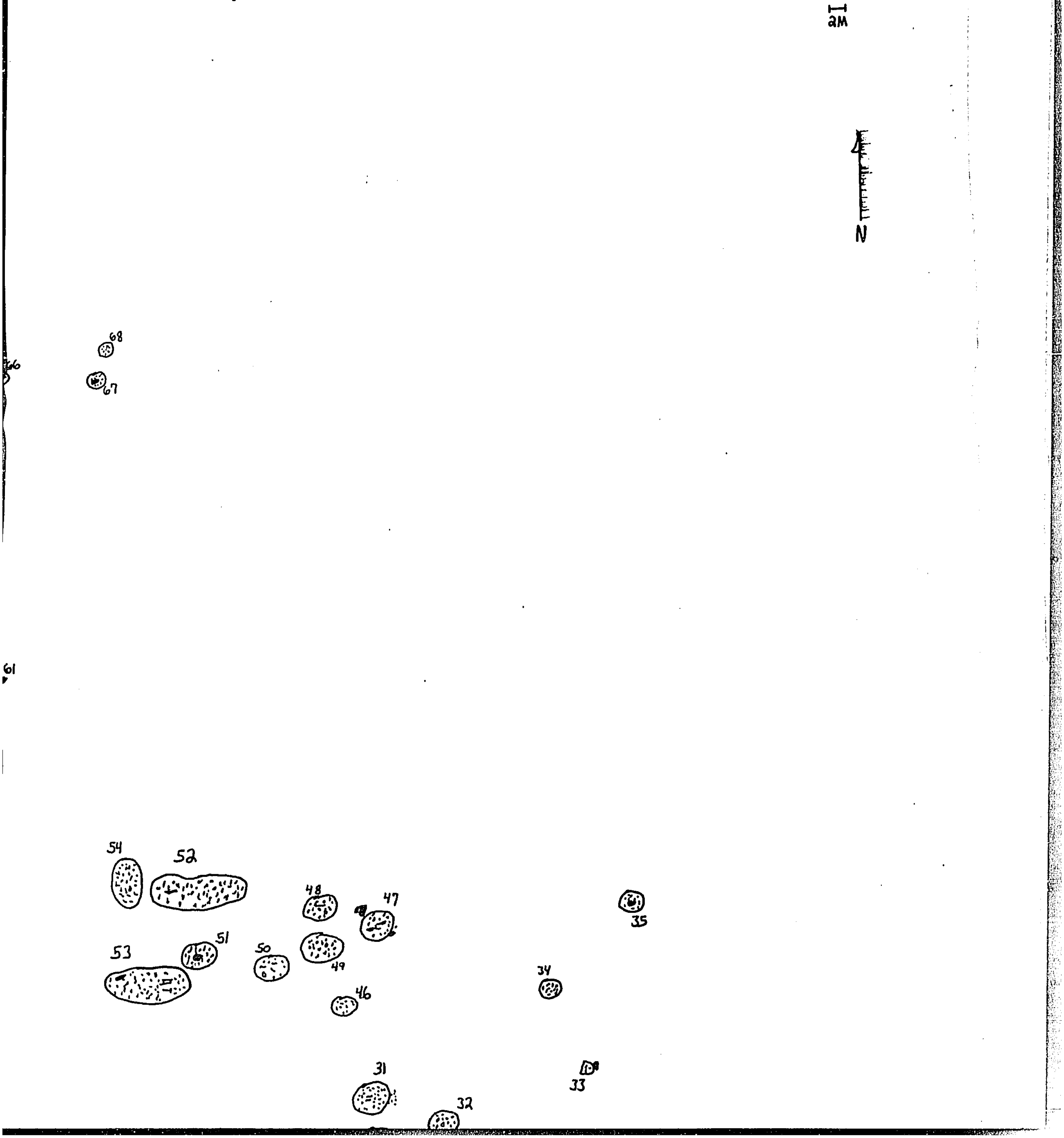

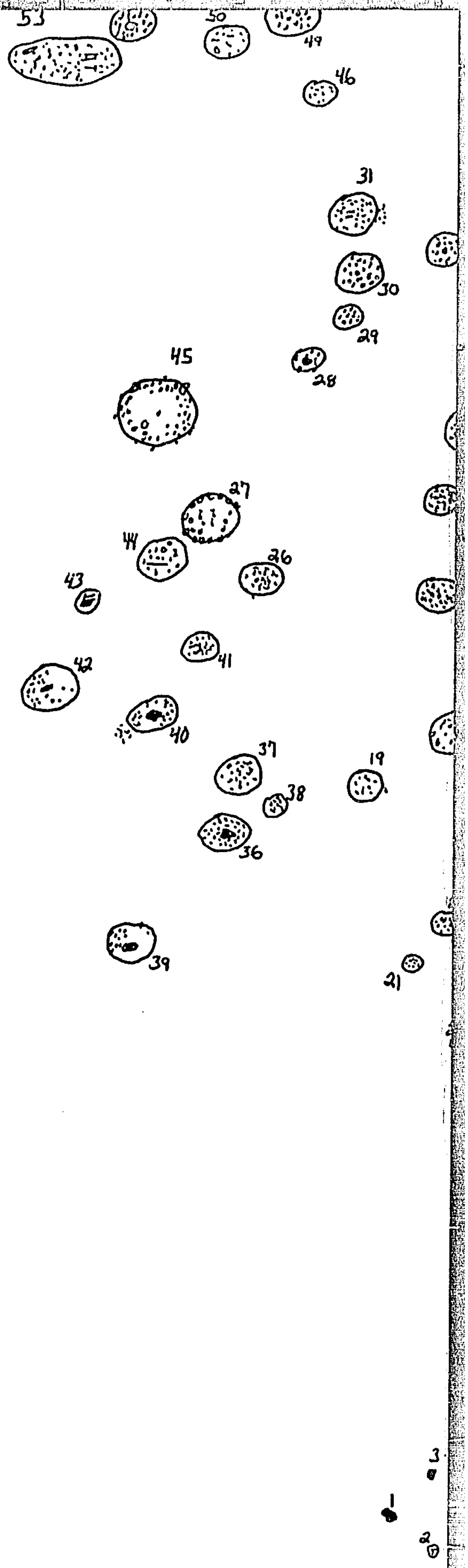
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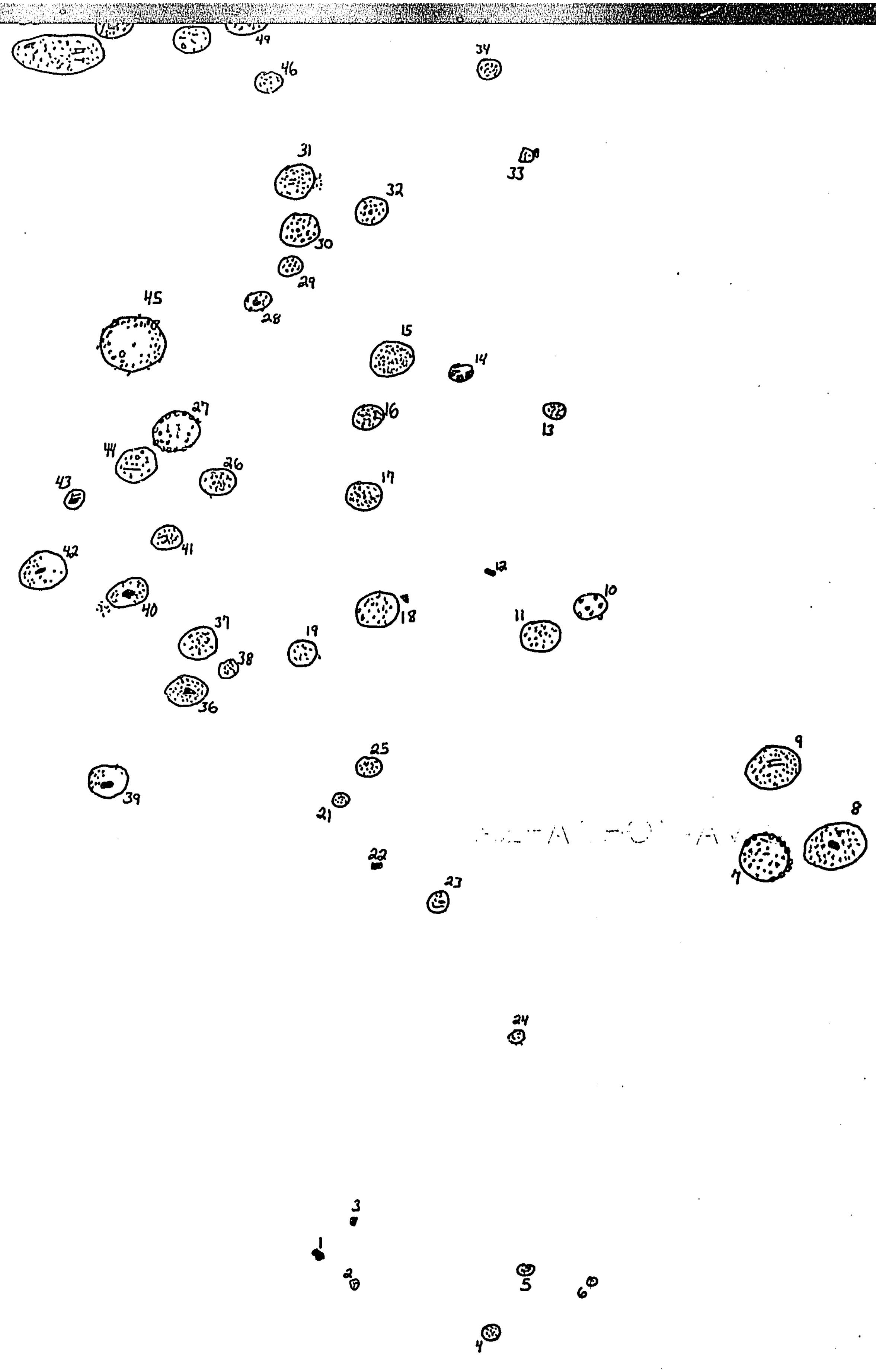

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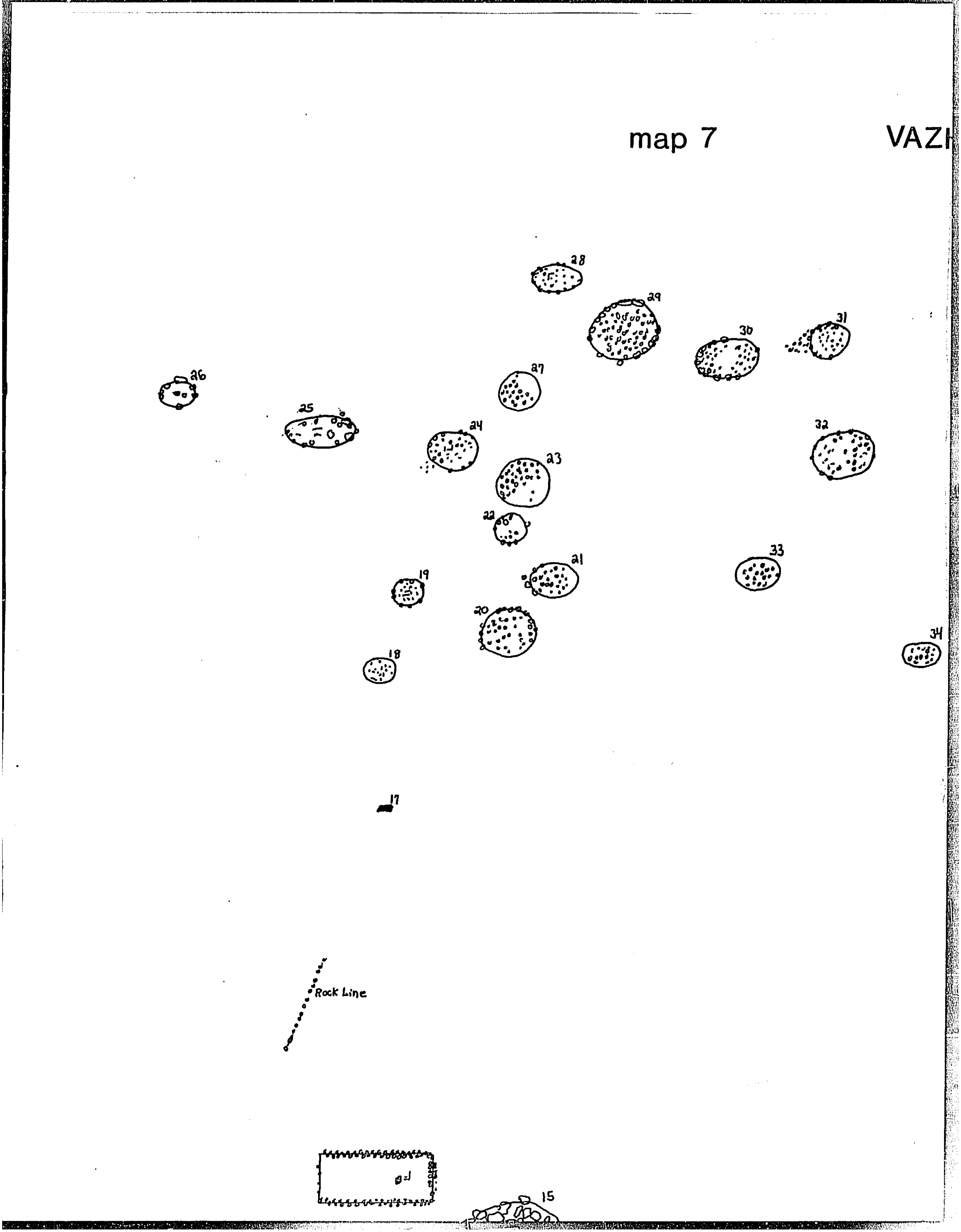
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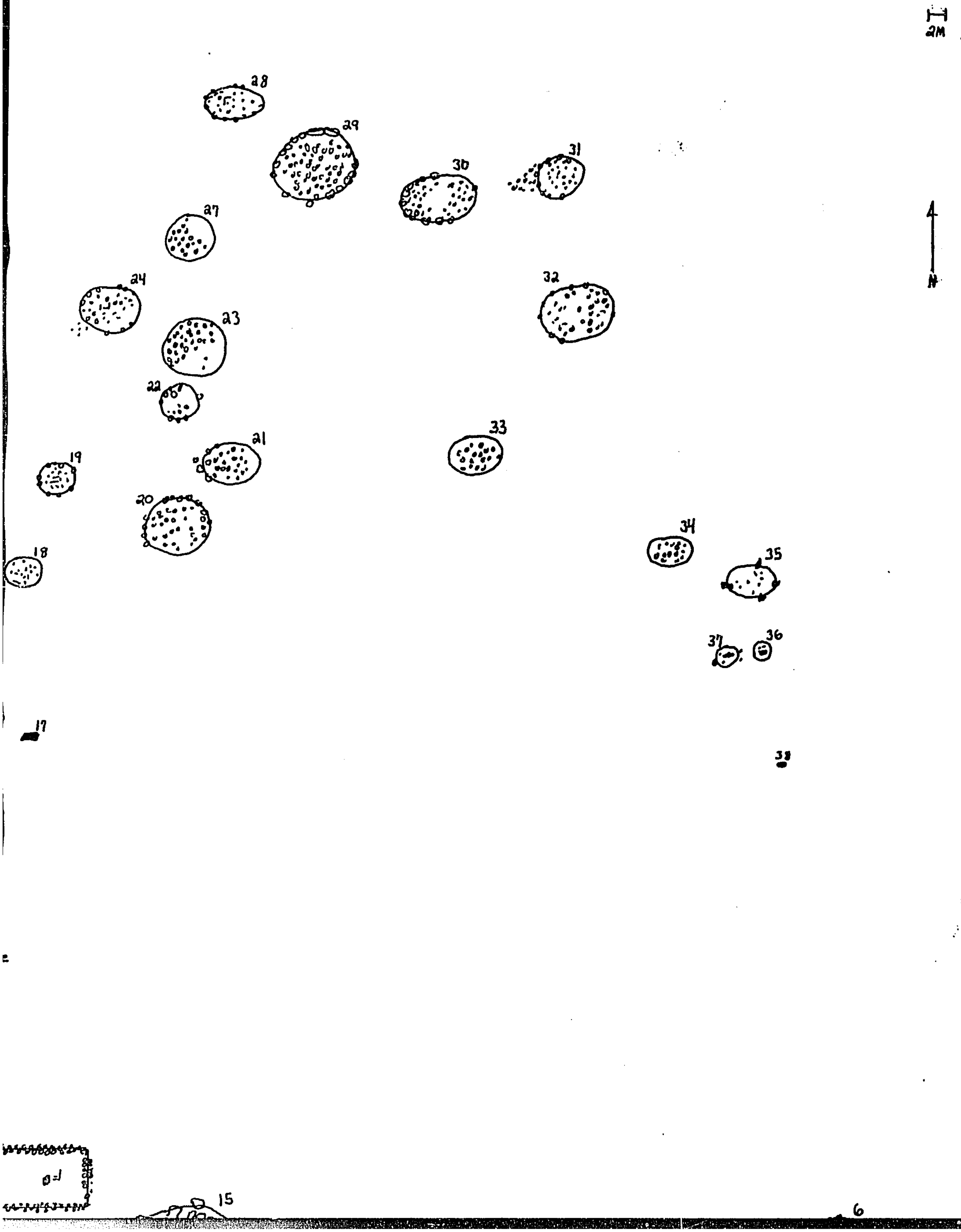
map 7 VAZHAITHOTTAM 4



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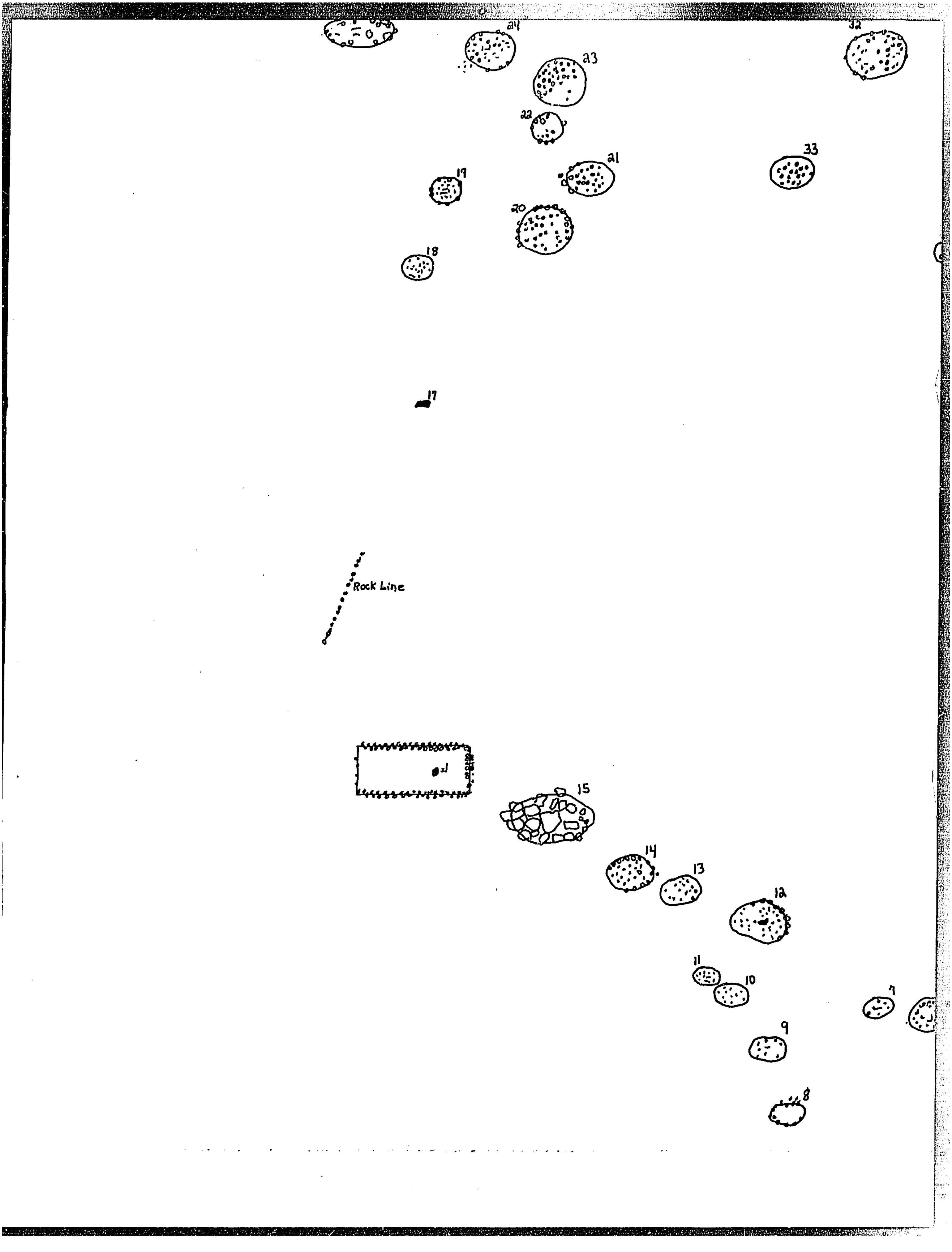
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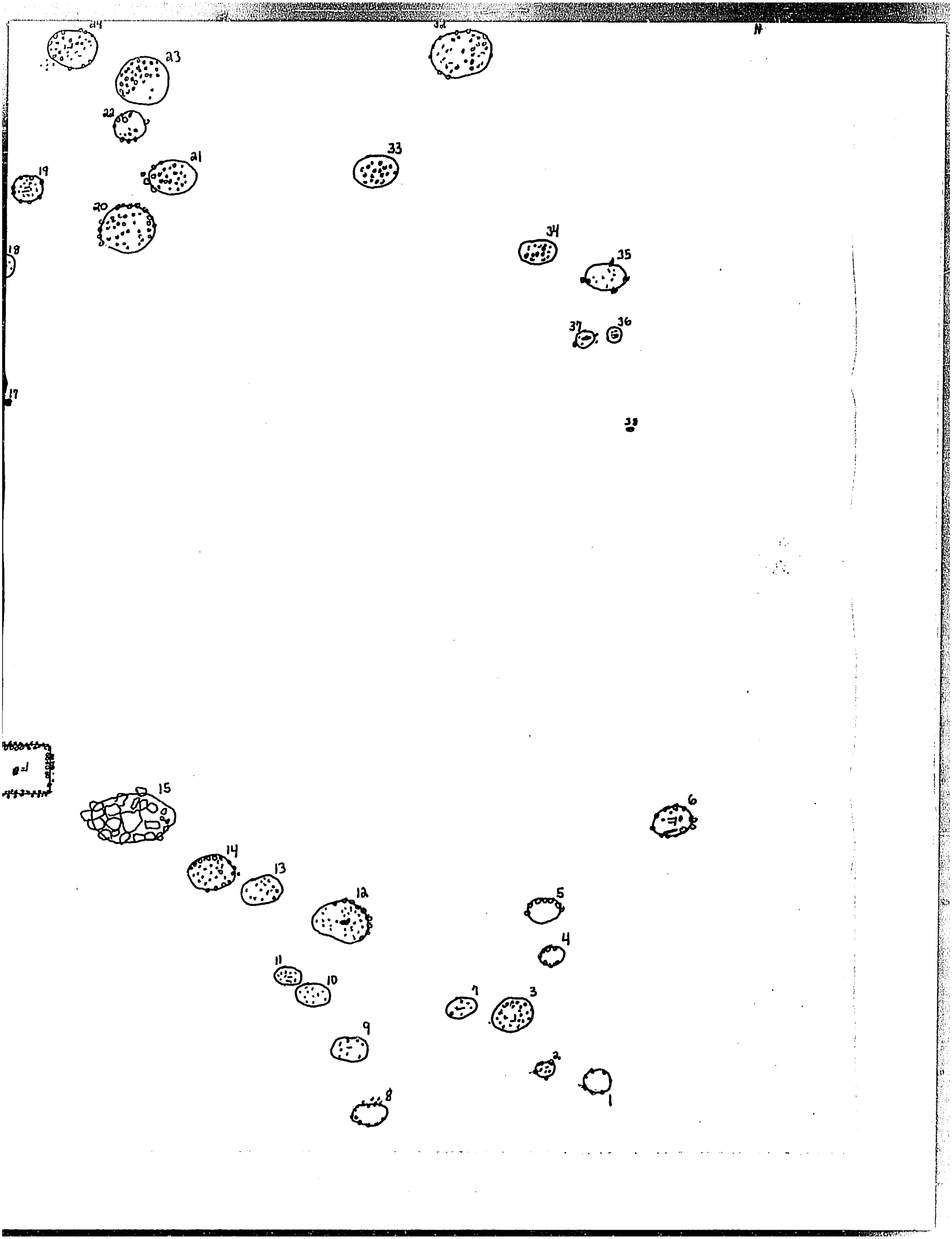
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